ELECTRIC REFRIGERATION NEWS

The business newspaper of the electric refrigeration industry

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NICHOLSON EXPLAINS ELECTRIC CODES

Varying Regulations in Different Cities an Obstacle to Sales

S. L. Nicholson, acting vice-president of Westinghouse Electric and Mfg. Co., and chairman, committee on uniform ordinances, National Electrical Manufacturers' Association, gave a most interesting and instructive address on the present status of municipal and state regulations affecting fire and casualty hazards at the meeting of the Electric Refrigeration Council, held at Waldenwoods, Mich., last month.

The electrical industry has been confronted with the problem of national, state and local legislation for many years and in many cases the differences in the regulations adopted by authorities in various localities has placed an undue burden of expense on the industry and has definitely retarded its development. The whole subject is one which can best be handled through associations, authorized to represent the industry.

This subject is one of far-reaching importance to the electric refrigeration industry, and deserving of the most careful study by manufacturers, distributors, dealers and central stations. The problem is an excellent example of the opportunity for cooperative effort.

Mr. Nicholson suggested that the electrical refrigeration industry endorse the uniform electric ordinance which has been prepared by the National Electrical Manufacturers' Association and which has already been adopted in a considerable number of communities, through the efforts of the Society for Electrical Development, Inc., working in cooperation with the local electrical leagues and clubs. He also advised that proper committees be appointed to review the rules and regulations in the code which may affect the installation and use of electrical refrigeration, and to study the procedure necessary in getting revised the existing electrical code as it affects the production of the electric refrigeration industry.

Co-operative Advertising Creates Discriminating Buyers

Referring to cooperative advertising, Mr. Nicholson said that he had long been an opponent of this idea and had on many occasions vigorously protested against subscriptions by his company to cooperative advertising funds. He had firmly believed that this money might better be spent in creating prestige and good will for their own name and trade-marked goods. He admitted, however, that he had lately changed his mind on this subject. He had come to realize that there is a very definite and economical advantage to cooperative advertising under certain conditions. In the early stages an industry is confronted with non-discriminating buyers. In other words, the public is not yet sold on the service of the new product and is not sufficiently informed regarding its merits. With such conditions, cooperative advertising is the best way to break down sales resistance and to create discriminating buyers. Having accomplished this first step in the process of creating sales, he believes that the manufacturer should then follow through with his own advertising to sell his own product.

Advantages of Industry Organizations

Discussing the advantages of industry organizations, he pointed out a number of distinct opportunities for highly desirable trade association activities. For example:

Trade associations may function effectively in the standardization of terminology, dimensions, sizes, ratings, test specifications and other matters of commmon interest to all manufacturers.

Through a trade association your industry may protect itself from any common menace. Through a trade association your industry may cooperate with other organized bodies, who will recognize you if you come organized and representing the industry.

Mr. Nicholson then took up the subject of uniform electrical codes and ordinances. Mr. Nicholson is chairman of the committee on uniform ordinances of the National Electrical Manufacturers Association, and has devoted a great deal of time to the study of the subject. He has long been a leader in this phase of the association's activities, and is responsible for much of the constructive work which has beeen accomplished during the past few years.

Early History of Electrical Codes

About twenty-five years ago the insurance agencies noted the growth of electrification and viewed it as a fire risk. This resulted in the formation of the National Fire Protective Association. The exact status of the National Electrical Code is frequently misunderstood by many people,

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Commercial Refrigeration Equipment Exhibited at Dairy Industries Convention

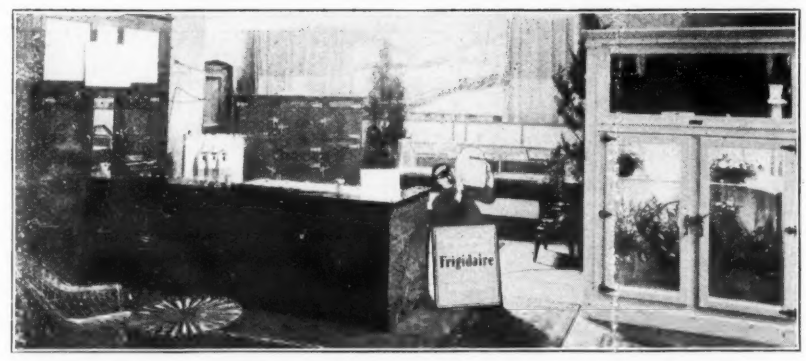
Electric refrigeration equipment for ice cream manufacturers, distributors and dealers was a feature of the exhibit held in Detroit October 6 to 14 in connection with the Dairy Industries Convention.

Electric refrigeration cabinets and coolers for dairies, cabinets for bottled goods and other special applications, dairy trucks with electric refrigeration equipment, and electrified soda fountains, were exhibited and demonstrated. The enormous exhibition hall was filled with displays, in which machinery of various kinds predominated.

It was evident from a survey of the exhibition that the progress of the ice cream industry has been largely due to its widespread adoption of mechanical and electrical methods of producing and handling its product.

In the booth of the Nizer Corporation, illustrated above, a new line of small ice cream cabinets in 2, 3, and 4-hole sizes were featured. The Nizer electric dairy cooler, especially constructed to meet conditions on the farm, being large enough to handle the production of a 16-can dairy and providing means for the initial cooling also attracted a great deal of attention.

BOSTON HOLDS ITS SECOND ANNUAL ELECTRIC REFRIGERATION EXHIBIT



A section of the Frigidaire exhibit, showing commercial applications, one of the many educational displays at the Boston Show.

The second electrical refrigeration exhibit in Boston was presented in Horticultural Hall during the week of September 27, 1926. The second exhibit far exceeded the first, which was held in a large store on Boylston Street in the Spring of 1925.

Horticultural Hall is one of the largest exhibition halls in the city, and every available foot of space was occupied. Special decorative features suggesting frigid atmosphere were installed for this occasion. Hand painted winter scenes added greatly to the color scheme.

Ten Manufacturers Represented

Units were presented by the following companies: Kelvinator, Coldak, Frigidaire, Rice, Servel, Ico-O-Lator, Absopure, Iceberg, Champion, and Iceola. Every piece of merchandise in the show was in operation, with ample supply of foodstuffs to show the good qualities of electric refrigeration, and many of the exhibitors served gratis ice cream, frozen pudding, coca-cola and ginger ale, to the visitors. A salon orchestra furnished music daily.

Although the show was run in cooperation with the Edison Electric Illuminating Company of Boston, only the manufacturers' representatives occupied the various booths.

The policy under which this show was operated was as follows: a total budget of $5.000 was made up, 40% of which was subscribed by The Edison Electric Illuminating Company of Boston, and the remaining $3,000 by the exhibitors, the latter paying according to the amount of space occupied. Complimentary tickets were issued, which they mailed direct by the exhibitors which were mailed direct by the exhibitors from their own places of business. In order to get a high standard, fifty cents admission was charged at the box office for those not holding complimentary tickets, and 549 tickets were sold during the week.

The show was well advertised in the Boston papers the week before opening, and on each day during the week of operation. The papers gave considerable publicity to the show in the news columns. Talks were broadcast from Station WEEI during the week by Miss Margaret Weimer, domestic science expert, the Boston *Herald-Traveler*.

The committee representing the central station and manufacturers, under whose auspices the show was held, were as follows: C. E. Greenwood, *chairman*, superintendent of the appliance department, Edison Electric Illuminating Co.; H. W. Newell, general manager, Delco Light Products (Frigidaire); Charles Gould, general manager, Kelvinator Boston, Inc.; N. N. Prentiss, sales manager, Coldak Corp. of New England, and R. W. Harris, district manager, Servel Corp. J. J. Caddigan, superintendent relations with allied interests department of the Boston Edison Co., was general manager of the show.

The results were such as to create a desire on the part of the exhibitors to reproduce the exhibit in the early spring

LEGAL DISPUTE OVER ELECTRIC KITCHENS

New York Test Case Involves 150 Apartment Hotels

Equipping expensive hotel apartments with an electric refrigerator, a sink and an outlet, to which an electric stove may be attached, has led the Tenement House Commissioner of New York City to assert that the law is being violated because cooking is done in the apartments, although the rooms so equipped are called "serving pantries." The commissioner, Walter C. Martin, has issued an order to vacate the White Hotel, a $2,000,000 apartment hotel at 37th Street and Lexington Avenue, thereby precipitating a test case which may affect new buildings valued at $300,000,000, including the Park Lane, the Fifth Avenue Hotel and Arthur Brisbane's Ritz Tower.

The New York zoning laws permit the building of hotels much higher than apartment houses, and the recent tendency has been to erect sky-scraper "hotels" catering to wealthy residents of more or less permanent character. The adaptability of electrical equipment has apparently made it possible to equip such buildings in a way that is highly attractive to tenants and at the same time eliminate the more obvious fixtures of a kitchen.

In order to combat the drastic ruling and protect the enormous investment in the new type of structure, the leading owners have formed the Apartment Hotel Owners' Association and have employed an attorney to fight the case. They claim that the Tenement House Law was intended to protect families who have little choice as to their living quarters on account of limited means, and that it does not apply to the expensive buildings with fireproofing and every modern convenience.

Electric Refrigerator Men Visit Europe

H. G. Scott, president of the Servel Corporation, and A. H. Goss, president of Electric Refrigeration Corporation, have recently returned from extended trips to European countries. H. A. Tremaine, chairman of the board of the Nizer Corporation, is in Europe at the present time.

McGraw-Hill Papers Report Electric Refrigeration Survey

Comprehensive Survey Shows Need for Stabilization of Production, Selling and Servicing Practices

Results of a national investigation of the status of electric refrigeration as it affects manufacturers, distributors, dealers, central stations and the public are published in the October 30th issue of *Electrical World*. The survey, which embraced conditions in 154 localities having a total of 4,617,410 residential and commercial customers of electrical service, or 26.6 per cent of all such customers in the United States, was conducted by the editorial staffs of three McGraw-Hill publications, namely, *Electrical World, Electrical Merchandising,* and *Journal of Electricity.*

Estimate 339,046 Electrics in Use

The survey of McGraw-Hill publications in 154 localities representing 26.6 per cent of electric service customers in the United States, shows 69,251 domestic and 21,290 commercial refrigerators, or a total of 90,541 on the lines of central station companies as of August 15, 1926.

Assuming conditions in localities investigated to be representative of the entire country, the total number estimated to be in use is 260,-365 domestic and 78,681 commercial, or a combined total of 339,046.

The average saturation is 1.78 per cent. The South is highest with 2.41 per cent, the West is lowest with 1.15 per cent. The East rates 2.00, and the Middle West 1.70 per cent.

Through the courtesy and cooperation of these well-known and long-established publications, advance proofs of the survey results have been furnished to ELECTRIC REFRIGERATION NEWS. High lights from the report and extracts from the data are published in this issue in order to direct the attention of ELECTRIC REFRIGERATION NEWS readers to this important document. The complete report is so full of important facts, figures and worth-while opinion that it has been difficult indeed to limit this summary. Additional data will be published in later issues.

ELECTRIC REFRIGERATION NEWS urges that manufacturers, and all others interested in the future sound development of the electric refrigeration industry, make it a point to give the complete report most careful study. It is especially enlightening with regard to the experience, problems and viewpoints of central station executives. The importance of public utilities as factors in the marketing and servicing of equipment is clearly set forth.

Scope of the Investigation

In addition to the statistics covering the progress of electric refrigeration so far, the articles and tabulations deal with such phases of the industry as relations with the ice industry, makes of refrigerators sold, selling outlets, selling methods used, compensation of salesmen, typical refrigeration departments of utility companies, terms to users, relations among local outlets, servicing methods, servicing experience, most frequent causes of complaints, remote versus self-contained units, manufacturer-distributor-dealer relations, competency of retail outlets, general situation with respect to past conditions, energy consumption, market possibilities and sales estimates.

The conclusions of the report, which number 33 paragraphs, emphasize the imperative need for the stabilization of production, selling and servicing practices; that distribution, sales, installation and servicing organizations must be strengthened with the broadening market, and to meet the expectations of the public; that electric refrigeration has definitely arrived as a practical service to the home; and that the potential market (which is now only 1.78 per cent saturated) represents a real opportunity for all branches of the industry prepared to render a real service.

Introduction to the Report

"Electric refrigeration in the last year has spread like wildfire throughout the entire country. Fostered by the electrical industry and supported by the approval of the central-station companies, it has attained a surprising degree of public acceptance. There can be no doubt that the domestic electric refrigerator has arrived. This year's sales have doubled and trebled, in many cases exceeding in the first seven and a half months of 1926 the sales quotas set for the entire year. All this has not been accomplished, however, without tribulation, and although there are outstanding cases of unprecedented success in the development of this business, there have been many disappointments.

"Power companies, long cognizant of the desirability of this load for their residential circuits, have had to face new and vastly different problems in sales and service organization and assume additional responsibilities to their customers and the public. Refrigerator manufacturers who have worked for years to bring their machine to its present degree of practicable perfection have likewise been confronted with serious production, sales and service problems.

"The general public, investment bankers, inventive genius, high-class manufacturing and sales talent have been attracted by the possibilities of this most recent development of the electrical and refrigeration industries. This popularity and the rapidly broadening market have created a condition that is somewhat unstable as to sales, service, financing, production and distribution practices.

"Market possibilities appear almost unlimited and the business promises enormous total profits through rendering a highly valuable service to mankind. Because this is so, electric refrigeration should be

(Continued on page 4, column 3)

FRIGIDAIRE BRANCH MANAGERS MEET

Distributors in Dayton to Discuss 1927 Sales Plans

Branch managers and distributors of the Delco-Light Company and the Frigidaire corporation from all parts of the country met in Dayton, Ohio, for a two-day convention beginning Wednesday, Oct. 27. After greetings by E. G. Biechler, president and general manager, the men will inspect the new factory buildings at Moraine where machinery is being installed to provide for the production of 50,000 units a month next year.

In the afternoon the group will assemble at the Engineers' Club, where T. B. Fordham, works manager, will show charts and diagrams explaining the layout of the plant. He will be followed by Mr. Biechler, who will discuss general policies of the business. Representatives of the General Motors Acceptance Corp., the Geyer Advertising agency, and the educational department will give short talks.

On Thursday C. F. Kettering, vice-president of General Motors; C. A. Copp, commercial Frigidaire sales manager; R. E. Smithson, head of the service department, and H. W. Prior, Delco-Light sales manager; J. A. Harlan, household Frigidaire sales manager; S. R. Prugh, assistant household Frigidaire sales manager, and R. L. Lee, head of the educational department, will be on the program.

Coldak Corporation Buys Alaska Refrigerator Company

Coldak Corporation, New York, which is controlled and managed by the J. G. White Management Corp., is reported to have purchased all the common and preferred stock of the Alaska Refrigerator Co., Muskegon, Michigan, at a cost of $1,700,000.00. The Alaska company was established in 1891 and is one of the largest manufacturers of household and commercial refrigerators.

Absopure Frigerator Acquires Vogt All Metal Cabinet Plant

David A. Brown, president of the General Necessities Corp., builders of the Absopure Frigerator, has recently announced the purchase of the Vogt Refrigerator Co., Louisville, Ky., a modern plant designed and equipped for the exclusive manufacture of all-metal cabinets, and having a capacity of 50,000 units annually.

"THE ICE THAT FAILED" OR "THE TRUCKMAN'S BRIDE"

Humorous Motion Picture Used to Instruct Ice Cream Men at Dairy Industries Convention

Electric refrigeration talent was liberally employed along with professional film artists to produce a motion picture especially written to entertain the visitors to the Dairy Industrial Convention which just recently closed in Detroit. The Bonstelle Theatre was bought out by the Nizer Corporation, manufacturers of electric ice cream cabinets, to provide a full evening's entertainment for the guests on "Nizer Night," Tuesday, October 12th.

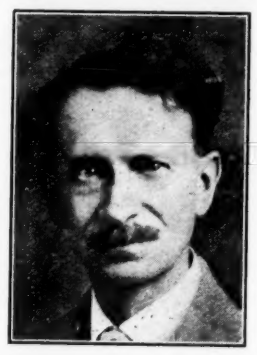
After an overture, the curtain rose on a snowy scene, appropriate to the business that had brought the audience together, and Mlle. Cassan, pupil of the famous Pavlowa, presented the "Dance of the Northern Lights." Immediately following the dance came the piece-de-resistance of the evening.

At the inspiration of Harry A. Sieck, general sales manager of Nizer Corporation, Gordon Muir, advertising manager, turned scenario writer to produce a most interesting motion picture presentation, entitled "The Ice That Failed," or "The Truckman's Bride." It was an appreciative audience that laughed at the romance between Peaches Melba, played by pretty Lucille Eggleston, and Sandy MacTavish, taken by Paul Travis of the Nizer Corp. Harry A. Sieck, general sales manager, Nizer Corp.; Harry McDonald, general manager, Arctic Ice Cream Company, and E. R. Kelly, Detroit branch manager of Nizer, were among the cast.

The plot was a humorous presentation of the advantages of electrically refrigerated cabinets for the ice cream business. There was also a serious note, making the growth of an ice cream parlor, after its adoption of electric refrigeration, very convincing. It was a masterpiece of broad humor, interspersed with real selling worth.

An animated portion of the film showed the operation of the compressor, ordinarily a difficult subject to make clear to the layman. Points in favor of electric refrigeration were then worked into the plot, showing that the retailer of ice cream, electrically kept, enjoyed the advantages of carrying more flavors, of keeping fresh stocks in the hottest weather, of getting more profits from every can, and of increasing his business by a large percentage.

The picture was followed by the Bonstelle Players in "Up the Ladder," which was appropriately chosen for its business appeal. Immediately after the play the stage was cleared for dancing.



Gordon Muir, Advertising Manager Nizer Corp. Author of Film

CUBA HAS 425 ELECTRIC REFRIGERATORS

New Rates for Electricity Will Enlarge Market

According to a special report received from Harris E. Dexter, Department of Commerce, Bureau of Foreign and Domestic Commerce, Washington, D. C., there are at present approximately 425 electric refrigerators in use in Cuba today. The great majority of these are installed in small markets or stores.

Considerable activity, with attendant success, has recently settled around this particular electrical appliance. The most popular size appears to be one of about seven cubic feet capacity. These refrigerators are sold on the installment plan, with twenty-five per cent in cash as a down payment and usually six equal monthly installments on the balance. It might be noted here that a recent court decision is generally regarded as having placed the installment selling in Cuba on a solid basis.

New electricity rates have recenlty been put in effect in Cuba, which should greatly increase the sale of this class of apparatus. The old rate was a general rate of 17 cents per kilowatt hour for the first 200 kilowatt hours, with a twenty per cent reduction for the next 1800, and a fifty per cent reduction for the next 8,000. The new rate for domestic refrigeration where the motor does not exceed one-fourth horsepower, is a six dollar per month flat rate, with a twelve dollar deposit, which will be noted, is a considerable reduction.

The new rate for commercial service is as follows: "Heating, cooking, water heaters and refrigeration; where the motor does not exceed three-fourths horsepower the rate is $4.00 per k. w. This gives the consumer the right to use forty k. w. h. per month. Excess is charged at the rate of six cents per k. w. h. or fraction thereof, allowing forty k. w. h. per connected horsepower. The excess used above that is six cents per k. w. h."

Issues Bulletin Featuring Electric Refrigeration Service

H. R. Van Deventer, Inc., New York, has recently issued bulletin "A," presenting the specialized organization and engineering service of the company. Special attention is given to electrical refrigeration. J. Alfred Grier is director of the iceless refrigeration engineering section.

NICHOLSON EXPLAINS CODE

(Continued from page 1, column 1)

including those in the electrical industry. The electrical code was formerly drawn up by the Electrical Committee of the National Fire Protective Association. It was then printed by the Board of Fire Underwriters. Insurance rates were determined by local fire insurance exchanges or bureaus. The code was then handed to local inspectors, who were authorized to interpret it according to their own judgment. As long as this condition prevailed, it was a case of give and take by the manufacturers who produced the equipment, the contractors who installed it, and the insurance inspectors.

With the "safety first" wave which swept over the country after the war, attention was directed to legislation affecting fire and casualty hazards of all kinds. Workmen's compensation acts were introduced in many states and local codes and ordinances were enacted governing the installation of electrical equipment. The situation gradually changed, with the tendency in the direction of giving the state and municipal inspectors police power, with authority to say "thou shalt and thou shalt not."

Politics and Labor Unions Enter

This resulted in the introduction of state statutes and municipal ordinances with rules and regulations which in many instances were at variance with the National Electrical and Safety Codes, causing confusion and tending to interfere with the free flow of products in interstate business. Frequently politics entered into the administration of these rules and regulations, and the labor unions have in some cases endeavored to influence such legislation to their advantage. The situation became very bad and one city was about to pass a local ordinance forbidding the installation of any electrical equipment until it had been approved by a municipally-owned laboratory.

Up to this time the preparation and administration of the National Electrical Code was largely in the hands of the insurance interests, being prepared by the National Fire Protective Association (an organization composed of insurance representatives and representatives from various associations interested in fire prevention, including inspectors, manufacturers, public utilities and engineers), and published and distributed by the National Board of Fire Underwriters to the various bureaus and exchanges throughout the United States.

American Engineering Standards Committee Must Now Approve Codes

In order that this Code would be recognized as a really National Code, arrangements were made to have it prepared in accordance with the rules of the American Engineering Standards Committee, which is a body composed of representatives of all the important engineering societies or associations as well as various departments of the United States Government and industrial organizations. The rules of this organization require that the producers, consumers and general interests affected by the standard must have passed upon it and that it must go through a very careful procedure in its preparation before it can receive final approval by this body. Therefore, standards so approved cannot be said to have been prepared by any particular interests and are truly National Standards.

The National Electrical Code and the National Electrical Safety Code have both been so approved, and as revisions take place they also have to be approved by the American Engineering Standards Committee before they can become a part of the National Standard.

Uniform Ordinance Prepared as a Guide to Municipal Bodies

It is generally agreed that any industry whose service involves a fire or casualty hazard is rightfully subject to proper regulation. The problem was, therefore, to direct such legislation in sane and proper channels. In order to assist in bringing about uniformity in legislation, the Electrical Manufacturers Council had prepared a Uniform Ordinance for the guidance of municipalities desiring to enact an electrical inspection ordinance or to revise their existing ordinances. Extreme care was used in the preparation of this ordinance, and various state commissions and legal authorities of municipalities were consulted; in addition, the matter was reviewed by eminent legal counsel before it was published.

Many of the sections of the ordinance can be changed to meet varying local conditions, and there are one or two addenda which offer suggestions along these lines. However, Section 7, reading as follows:

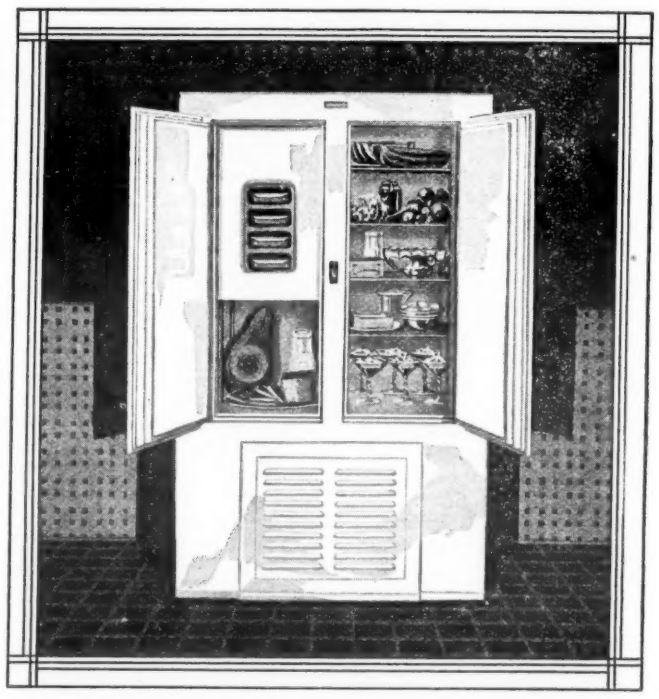
"CONSTRUCTION REQUIREMENTS—No certificate of inspection shall be issued unless the electric light, power and heating installations are in strict conformity with the provisions of this ordinance, the statutes of the State of ....., the rules and regulations issued by the Industrial Commission of ..... under authority of the state statutes, and unless they are in conformity with the most approved methods of construction for safety to life and property. The regulations as laid down in the National Electrical Code, as approved by the American Engineering Standards Committee, and in the National Electrical Safety Code, as approved by the American Engineering Standards Committee, and other installation and safety regulations approved by the American Engineering Standards Committee shall be prima facie evidence of such most approved methods."

—is the vital one insofar as adopting the National Codes as prima facie evidence that the work done in accordance with them complies with the most approved methods. With such a clause a municipality is assured of having the very best and latest rules and regulations protecting the life and property of its citizens. In addition, the manufacturers, distributors and contractors know exactly under what conditions their work will be inspected in the various municipalities in the United States. The manufacturers, therefore, can manufacture in quantity products for general national distribution throughout the United States and thereby reduce the cost to the ultimate consumer, at the same time insuring them of a product which will be safe from a fire and casualty standpoint.

COPELAND EXECUTIVES

STRENGTH

Naturally you respect the manufacturer who *gives* to his dealers more than he *asks* of them. That policy—made possible by great financial strength—is one element that makes the Kelvinator franchise so universally valued. Inquiries from responsible dealers will be answered in detail.



KELVINATOR CORPORATION, 2051 WEST FORT ST., DETROIT, MICH.
Division of Electric Refrigeration Corporation
Branches: NEW YORK • CHICAGO • BOSTON • DETROIT • ATLANTA • BALTIMORE
KELVINATOR OF CANADA, LIMITED, 1151 DUNDAS STREET EAST, LONDON, ONTARIO

(318)

Kelvinator

The Oldest Domestic Electric "Better-Always-Better" Refrigeration

COOPERATION ENDORSED

Cleveland Distributors Point to Benefits

The local cooperative movement among the electric refrigerator distributors of Cleveland, undertaken about one year ago as an experimental operation parallelling the national program of the manufacturers, is working out to the satisfaction of the members according to reports received by J. Robert Crouse, chairman of the Electric Refrigeration Council and leader of the cooperative movement.

Letters from W. T. Gray, Frigidaire distributor, and Ernest W. Farr, Kelvinator distributor, expressing approval of the results obtained through personal contact of the executives of the competing distributors and the organized educational program to develop the market, were published in the initial issue of the *News*.

Extracts from additional letters recently received from other Cleveland distributors, members of the local Electric Refrigeration Distributors Council, indicate the success of the activities and faith in future possibilities.

Hughes Recommends Local Council

Commenting on the work of the local distributors' council, which has carried on a $15,000 cooperative campaign through the Electrical League during the past year, W. L. Hughes, president of the Weaver - Perkins - Hughes Co., Cleveland distributors of the Copeland electric refrigerator, says:

"You are assured of our appreciation of the effect the Refrigeration Council has had on our business. We started just a short time before this association was formed, having come from another line of business where this sort of an association would be a godsend from the standpoint of sales, and where, I believe, it would bring the character of the business up to a higher level.

"When starting in in the electric refrigeration field, we feit there might be a great deal of antagonism towards us, but after the first few meetings we appreciated that our competitors were a great help to us. We certainly, at this time, want to thank the other boys for their suggestions and help; two of them going even so far out of their way as to come out here and make suggestions, in order to help us get started. This, I think in itself, was a direct result of forming the Electric Refrigeration Council as part of the League.

"The little set-tos we have had in regard to different sales have had, I think, a wonderful effect on all concerned at these meetings. Let me at this time, Mr. Crouse, thank you on the part of our company for having started the Refrigeration Council; I heartily recommend it and wonder why other cities have not followed promptly in forming such an association as you have started here."

Hibbard Says Plan Reduces Waste

I. B. Hibbard, president of The Hibbard Company, Cleveland distributors of the Servel electric refrigerator, writes as follows:

"We wish to express our appreciation of the co-operative plan which you have evolved among the distributors of electric refrigeration in Cleveland.

"This plan, as worked out through the Refrigeration Council, permits us the benefit of mutual interchange of ideas covering the exploitation of the business; it enables us to all hit together in our advertising campaigns and eliminates wastage therein; and I believe if continued it will amalgamate the refrigeration business still more closely and will establish for it a high code of ethics."

Uphold Principles Says Cushman

F. H. Cushman, of The Cushman Refrigeration Co., Cleveland dealer in the General Electri refrigerator, comments on the local movement as follows:

"Although my entry into this business has been subsequent to the formation of the local Council, my observation leads me to believe that there has already a considerable benefit accrued to the members, and there certainly should be continued benefits so long as the principles for which the Council stands are maintained.

"It is my hope that each member of the Council will continue to fully appreciate his individual responsibility in upholding those principles, and that the present cooperative spirit will prevail."

A Message to Electric Refrigerator Distributors and Dealers—

THE ADVERTISEMENT below, which appeared in The *Saturday Evening Post*, October 16th, is part of a cooperative educational program to promote the market for electric refrigeration. It is designed to help sell the "idea" of electric refrigeration to the public by featuring electric refrigeration as **"a way to better living"** and by emphasizing the key thought that **"to protect food is to protect life."**

This advertising and publicity program has been made possible through the cooperation of six of the leading manufacturers of electric refrigeration equipment who have subscribed equally to a fund of $100,000.00 which is being administered by The Society for Electric Development on behalf of the subscribing companies and the industry as a whole. The fund for the 1926 program was subscribed by the following companies:

Copeland Products, Inc.
Frigidaire Corporation
General Electric Co.
Kelvinator Corporation
Nizer Corporation
Servel Corporation

For information regarding booklets, posters, newspaper copy and mats, and other educational material which is available for local use, please address

The Society for Electrical Development, Inc.
522 Fifth Avenue, New York, N. Y.

As Reliable as Electric Lights

ELECTRIC REFRIGERATION is automatic. It requires, for operation, no effort or thought on your part. Whether you are at home or away on a week-end visit, it sticks faithfully to its task of keeping food safe. Day and night, it watches the temperature in the food compartments, holding it *constantly* below the danger line—50° (above which bacteria in food cause spoilage.)

The cost of this vigilance and health insurance is only a few cents per day—usually no more than for burning one ordinary light continuously.

Hundreds of thousands of housewives are enjoying the dependable, economical service of electrical refrigeration. You also should have this modern convenience. For authoritative information see your electric refrigerator dealer.

THE SOCIETY FOR ELECTRICAL DEVELOPMENT
522 FIFTH AVENUE, NEW YORK, N. Y.

A non-profit organization founded in 1912 to promote for the interest of the public and the electrical industry, the greater service of electricity

"The Magic Box", a booklet beautifully illustrated in colors, will be a delight to your children. Ask your electric refrigerator dealer for a copy. Or send ten cents in stamps to The Society for Electrical Development. 522 Fifth Avenue, New York, N. Y.

Electric Refrigeration

— A WAY TO BETTER LIVING

ELECTRIC REGRIGERATION NEWS

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OCTOBER 30, 1926

Change of Address

ELECTRIC REFRIGERATION NEWS is now permanently located with offices on the second floor of the Printing Crafts Building, at 409 East Jefferson Avenue, Detroit, Mich. (Telephone, Cadillac 4445.) Engraving, composing, printing and mailing operations will all be carried on in the same building. Ample facilities are available to assure rapid handling of editorial and advertising material.

Incorporation

The Business News Publishing Co. has been incorporated under the laws of the State of Michigan, with a capital stock of $50,000, of which amount $20,000 cash will be paid into the treasury at once to provide working capital for the initial development. This company will publish ELECTRIC REFRIGERATION NEWS and do a general publishing and printing business.

Management

F. M. Cockrell, principal owner of the publishing company, will direct the editorial policy of the paper. George H. Howell has been appointed business manager and will be in active charge of the advertising and production. Miss Beulah Wertz has been appointed office manager and will have charge of circulation.

Editorial Aims

As stated in the initial issues, ELECTRIC REFRIGERATION NEWS has been established with five broad, but definite, aims as follows:

(1) To encourage the development of the art.

(2) To promote ethical practices in the business.

(3) To foster friendly relations throughout the industry.

(4) To provide a clearing house for new methods and ideas.

(5) To broadcast the technical, commercial, and personal news of the field.

Acknowledgment

We take this opportunity to extend thanks to the Evans-Winter-Hebb Co., Detroit, and the Society for Electrical Development, New York, for providing temporary offices and facilities during the period required to get the publication started. In this connection, may we ask that all future communications be directed to the new address given above.

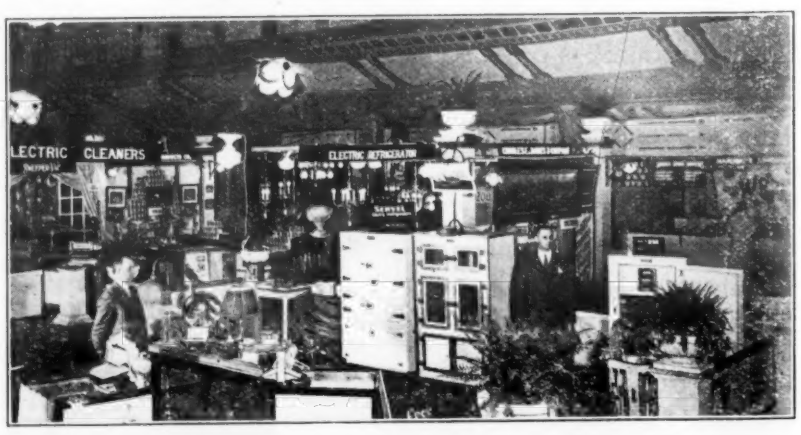
Appreciation

ELECTRIC REFRIGERATION NEWS has a good start and is going strong. Returns from the field in the form of complimentary letters, subscriptions, news contributions, requests for sample copies and advertising rates, and various other evidences of interest and confidence, all indicate that the new paper fills a real need and provides a worth-while service.

Cooperation

The effect of the unusual cooperative movement which was started in the electric refrigeration industry last year has been particularly noticeable in getting the paper under way. The personal acquaintanceship and spirit of friendliness developed through the meetings of the Electric Refrigeration Council and the activities of The Society for Electrical Development has been reflected in the attitude toward ELECTRIC REFRIGERATION NEWS. Cooperation has been manifested in many and most practical ways, in several cases entirely unexpected. We are deeply appreciative of this helpfulness and will, in turn, try to be helpful to the industry.

Electric Refrigeration Display Draws Big Crowd in Chicago



The Servel Electric Refrigerators displayed and demonstrated by the Commonwealth Edison Company at the Sixth Annual Food and Household Exposition, held in Chicago September 25th to October 2nd, 1926, proved to be one of the most popular and interesting exhibits, considering the great number of people that visited the display.

The records show that over 18,000 attended the exposition daily.

The picture above shows that three sizes of refrigerators were displayed—suitable for the small or large family. The refrigerators were filled with tasty and tempting foods, and one of them was electrically connected to show the frosted compartments, also the ice cubes in the convenient handy trays. Thousands of questions were answered, and a good number of orders were taken at the Exposition.

TREND OF THOUGHT IN THE FIELD

McGraw-Hill Survey Shows Attitude of Central Stations, Distributors and Dealers

(Continued from page 1, column 5)

developed along the safest and sanest lines that will at once safeguard the interests of the ultimate user, the manufacturer, the electric utilities and other dealers. The present situation calls for the most careful scrutiny, judgment and planning by every utility executive, commercial manager, responsible manufacturer, distributor and dealer in the country."

"Standing out head and shoulders above all else as viewed from a national standpoint are two things of particular significance to the central-station industry and to the electric refrigerator manufacturers:

"*First*, among utility executives there is a striking, almost unanimous, approval of the electric refrigerator as a load and revenue builder. Opinion differs somewhat as to sales methods, service organization and manufacturer s ability and willingness to supply repairs and sales and service help.

"*Second*, where the central-station company or other dealer has competent, fully organized sales, installation and service departments and where the refrigerators sold are of a high standard in manufacture and inspection, the sales volume has equaled and often exceeded expectations and the service obligation on machines in use has been less than was expected."

Makes of Refrigerators Sold

"In tabulating the data contained in the field reports it was found that 28 different makes of electric refrigerators occurred with sufficient frequency to be included. This of course does not include all of the machines that have been produced, as there are 93 or 95 different makes on the market, some having built less than 25 units. There are also about 150 or 160 more in some stage of development."

Selling Outlets

"Of the 154 central-station companies visited, 124 are actively engaged in selling electric refrigerators. There are 65 distributor-dealers—that is, distributors or what might almost be termed factory branches maintaining extensive retail selling organizations—54 special dealers who sell electric refrigerators exclusively, 80 electrical dealers or contractors, seventeen department or furniture stores, eleven oil burner or house-heating concerns, fifteen hardware stores and 34 miscellaneous dealers, including radio shops, plumbers, garages, auto supply houses, free lances and small agents.

"As might be expected, the distributor-dealer organizations have the highest percentage of sales, 40.1 per cent of domestic and 60.3 per cent of commercial units. Nearly all of the distributor-dealers have been in business from two to five years and in that time have built up substantial sales and service departments and have acquired a great deal of valuable experience in the technique of the business.

"The central-station companies have accounted for 31.9 per cent of domestic and 20.5 per cent of commercial units sold, which, in view of the fact that most of them have been active for but a little more than a year, speaks very well for their ability to turn such an effective selling organization into a specialized field on such short notice. Special dealers have sold 16.7 per cent of the domestic and 15.1 per cent of commercial units, indicating the importance of specialization in this business when compared with the sales of other dealers who handle electric refrigerators as an adjunct to their regular business.

"Electrical contractors and dealers have made a very good showing, selling 6.2 per cent of the domestic machines and 2.6 per cent of the commercial. Sale of electric refrigerators fits in very well with the electrical contractors' business, because frequently the installation work requires a certain amount of wiring, especially for remote compressors. The low percentage of the total sales, 5.1 per cent domestic and 1.5 commercial, made by the department and furniture stores, oil-heating, hardware and miscellaneous dealers combined can be attributed to the specialized nature of the sales and service organization required, which these outlets hesitate to set up.

"The high percentage of total commercial unit sales made by distributor-dealers, central-station companies and special dealers indicates again the value of specialization in the business. It has generally been found that unless a dealer has a salesman who is specially trained in the commercial phase of refrigeration and who is something of a refrigeration engineer, misapplications may be made or inadequate equipment may be sold and as a result the commercial sales will be retarded. Central-station power salesmen have worked out very well in this respect and the distributors and some special dealers are adding to this branch of their sales forces."

CENTRAL STATION EXECUTIVE OPINION

From Electrical World

At the present time one central station executive estimates that 10 per cent of the lighting customers are immediate prospects for electric refrigerators, and that this will increase to 20 per cent by next year, after more machines are seen in use and observed in use by visitors to owners now using refrigerators. Increased production will lower the list prices and thus increase the potential market.

A utility general manager stated that "electrical refrigeration is the salvation of the residential business." He estimates that in five years one-third of his customers will have electrical refrigerators, and that these in use will increase his residence billing 50 per cent.

One electric refrigerator distributor was firm in his belief that the utility company is an important factor in promoting electric refrigeration by creating confidence in the service. The fact that the local central station sells or publicly approves of this device is a valuable influence in building acceptance of electric refrigeration.

A small utility estimated that in 1926 it would sell three times as many electric refrigerators as last year. The general manager expected that all that was necessary to sell refrigerators was to put them on the floor and let people walk in and carry them home. As a consequence sales will not exceed those of 1925. The first six months of 1926 have made these people realize that for the next year a definite program must be prepared.

Many central-station executives are weary of talk about the revenue return. They are aware of this and would appreciate guarantees of deliveries, service co-operation and a product thoroughly inspected at the factory.

The small-town utility cannot afford to have a special service man, said a central station manager, and he is afraid to tackle the refrigerator business until he is sure that his company is prepared to give customers proper service, either through factory or company service department.

Apparently, in the opinion of one power company executive, the more important ice manufacturers and electric refrigerator manufacturers have got together on the idea of selling "better refrigeration" and not comparing ice with electric refrigeration. So far as domestic installations are concerned, ice manufacturers have found that such selling brings them five customers to one electric refrigerator sold.

A central station manager stated that for every ice plant offered for sale in his territory there were three or four prospective buyers. This further proves that the ice business is on the increase in this section, and if not appreciably on the increase, is still considered a paying business.

INSTALLATION AND SERVICE EXPERIENCE

From Electrical World

Servicing has been an expensive item thus far, but one utility executive is mindful of the time, about fifteen years ago, when such expense on ranges was very high and the company thought for a time it might have to discontinue selling them. Now range servicing costs about $1 per year per range, and consequently is not burdensome.

The experience of several utility companies has been that the remote installation is the most popular. Many have bought the cabinet and unit outfits and had the unit removed and a remote installation made.

Care should be taken to sell remote installations to property owners and to sell self-contained installations to those who rent, said a sales manager of one central station company. The reason for this is quite obvious, as the moving possibility is greater with the latter, and the moving of a remote installation requires extra time and service.

Care in installation is the answer to 95 per cent of the cause for complaint. On commercial jobs the principal difficulty has been to get the user, particularly in meat markets, to understand the operation of an electric refrigerator, and to defrost the tank when necessary.

Service men say that most of their troubles result from faulty assembly due to poor inspection of units at the manufacturing plant. They urge that more attention be given by the manufacturer to turning out a workmanlike job that will not have to be completed by the service man when the machine is installed.

Selling Incidents

An interesting incident was recounted by the utility sales manager of an apartment house owner who first refused to install electric refrigeration, but later came around asking for it. It cost him $1,900 additional for this equipment, and he said that the main reason he wanted to install it was that his banker would loan him more than ten times that amount additional on his mortgage with refrigeration installed than he would on the property without refrigeration. This indicates one of the selling points that can be used to get apartment house business.

Sales Volume Depends on Developing Competent Sales and Service Men

A great deal of practical experience is necessary both in sales and service. A distributor who has been in business for six years, declared that it takes nearly three years to develop what he would call a competent refrigeration man. Salesmen and service men are the most difficult problem in the sale of electric refrigeration, and these represent the "neck of the bottle" for sales volume.

SELLING EXPERIENCE AND OPINION

From Electrical World

One commercial manager is strongly against the idea of selling campaigns, whether on refrigerators or any other item of electrical merchandise. He feels that more is accomplished in the long run by steady and unobstructive sales pressure than by the ballyhoo of a campaign.

Although many companies have been highly successful in reaching and exceeding their 1926 sales quotas, there have also been many that have been greatly disappointed in the result of their 1926 sales. The latter can be attributed to the manufacturer overselling the company, the company not organizing adequate sales organization, or the setting of a quota in excess of all possible attainment.

A special dealer in a town of 75,000 believes that it shows a weakness in the selling organization to put electric refrigerators out on trial.

From past experience a central station commercial manager finds that each man should be given enough territory to include 1,200 to 1,500 domestic meters. He is strong for a separate department of salesmen to handle the refrigerator sales, stating, "Refrigerator selling is a much higher type of selling than regular appliances. The men should be paid at least $150 a month drawing account, charged against 10 per cent on sales."

A large special dealer finds people are moving out of apartments because they are not equipped with electric refrigeration. As a consequence he is getting considerable business in already built apartment houses.

Although canvassing is very unpopular in many sections of the country, this method has proved the best one for obtaining prospects.

DISTRIBUTOR AND DEALER REACTIONS

From Electrical World

The manager of an electric refrigerator factory branch observed that many present dealers have been carried into the refrigerator business on the high wave of popular interest. These dealers are not always equipped to furnish good service, and many of them have no intention of so equipping themselves. They are selling, only selling, refrigerators; they have no interest, as has the power company, in the continuous operation of the machines, and the object of such service as they give is to keep the machine sold only.

A distributor felt that the sale of electric refrigerators could be best handled by central station companies if they were progressive. They have a close contact with the public. They have the confidence of the public. They are able to handle long-time payments.

One large distributor bemoans the general idea on the part of the public generally, the bankers, prospective manufacturers and would-be salesmen that electric refrigeration is a gold mine. He declares that people have been oversold on its possibilities without even considering possible pitfalls ——

"This has been the most exasperating year in the business and the most exasperating one we may expect," said a distributor. "The reason is that we have now three times as many dealers as last year, which means three times the production and three times the number of green service men. All this has combined to increase our troubles."

Relations with the manufacturer have been very satisfactory, according to one dealer, and although the discount of 25 per cent is, in his dealer opinion, not sufficient, it has been largely compensated for by the advertising and sales service which the distributor in this territory has given.

As to the electrical and mechanical considerations, the commercial manager believes that all refrigerators of standard manufacture can now be depended upon to perform consistently, continually and satisfactorily, provided they are installed in accordance with the manufacturer's rules and regulations.

Additional data from the McGraw-Hill electric refrigeration survey, including a summary of the results and opinions, will appear in the next issue of Electric Refrigeration News.

SALESMEN: Be Prepared to Answer These Questions

Wide Difference Between Views and Queries of Men and Women Shown by Chicago Survey

Will chemicals taint the food? Is there any danger from acids? Will it make the lights dim? What makes it cold? Is there any danger from lightning? Do time payments make it cost more? Is it noisy? Why don't you make more and lower the price? Is it difficult to run? Can I get anything for the old cabinet?

These and many other questions asked by women show the keen interest in electric refrigeration, which has been produced by the advertising of manufacturers and dealers and the sales campaigns which have been carried on during the past year. At the same time they show the lack of understanding, and in some cases the fears and prejudices which have created by vague ideas of the operation of this new household service.

These are the questions which women ask women—the survey was made by young women, trained and experienced, whose sincerity and evident desire to get a sympathetic understanding of the prospect's viewpoint, enabled them to get frank replies. It will be well worth while to consider carefully the interviews reported in this and previous issues. Then decide the *best* answer to give in each case.

What Happens During Electrical Storms?

A-26 Mrs.——. Small children. Small home, which they own.

"No, I haven't any electric refrigerator now but I surely hope to have one some day when I can afford the high cost. Any one with a lot of children ought to appreciate having every convenience even if it does cost a little more. Is there any danger for children if they got near it? What about the power going off during electrical and ice storms? You couldn't have your temperature very even if that happened very often. Could this suburb have a service man? Agents seem so urgent in their talk that I fear they are sliding over some poor points."

Do You Have to Install Drainage Pipes?

A-27 Mrs.—— Very nice home. Well situated. Two children.

"I haven't any refrigerator now but they are the only thing to have, so I surely hope that the day will come when I can have one. I am positive that the day is not far off when every woman will have one just like an electric sweeper. A friend of mine, Mrs.——, has one and she says that she finds it the best 'expense' she has had for many a year. She's a woman of good judgment so that I consider any praise she can give it would be good recommendation for it. My sister lives in an apartment where there is an electrical refrigerator with a basement unit. The janitor charges more per month because of this but he spoils it by trying to economize. He turns off the electricity whenever it has run just a little bit and right in the midst of freezing ice cubes, the temperature begins to rise. More food spoils this way than with the old refrigerator. Do you have to install drainage pipes for this kind as you would have to have with the other kind? Or is there no drainage? Is it much bother to have one installed? I can see where they are worth the price but every one can't afford to pay out such a price in one chunk."

Is it Practical to Install an Electric in Our Sixty-Pound Icer?

A-28 Mrs.——. Small newly built home in nice locality.

"No, I haven't one and I don't imagine that I will be able to have one for some time. When we built this home, we thought that we were doing well to buy even a good porcelain icer, and that cost so much that we will have to keep that till we have made it pay to have gotten it. It holds 60 pounds of ice.....I wonder if that size could be installed with a motor and made into an electric refrigerator or aren't they at all practical when made over? We joke already about the new electric one, but we can't have one now. I hear that they do not pay for themselves even after they have been used for sometime."

Are They Really a Saving?

A-29 Mrs.——. Elderly lady. Large home and estate.

"I haven't one but I know that they are a wonderful thing to have in one's home. It seems such a logical step in the progress of refrigeration. Every friend of mine who has one recommends it. In a year or two, I hope to have one. Are they really a saving, I wonder, after the first expenditure. Still you would have to have an awful amount of economy to make up for all of $295 or $345."

Is There Any Danger of Getting Shocked?

A-30 Mrs.——. Middle aged couple. Large house. Of evident wealth.

"I haven't one now merely because of the price. Every word that I have heard is in favor of it, however, and the money is the only thing that keeps me from having one just now. The mere fact that every one is in favor of them, a new thing on the market, is a fine recommendation for it. Why don't they make them smaller and charge less for them. Is there any danger of getting shocked on the wires? What about the electricity going off here in—— there are no provisions, are there, for keeping the temperature even then, is there?

Survey Gives Women a Chance to Tell Their Side of the Question.

A-31 Mrs.——Middle aged. Very nice to talk to. Seemed interested in survey work.

"No, I haven't any electrical refrigerator but not because I don't realize that they are the very best thing to have. I have had ever so many agents or salesmen here trying to sell them and I have been struck with their apparent sincere way of boosting their product. Many of the salesmen from other plants have been so sort of unsure of the benefits and good points of their product that it seems that this really must be good to have them so sure of it. I think that this survey work among the women is a very good idea too, because it gives the women a chance to give their side of the question, which isn't always the same side as that of the manufacturers. *There are lots of little things that a man doesn't think a woman wants to know about them, but a woman can't take things for granted about such an expensive thing as this.*"

What About the Power Here—It Goes Off Whenever it Storms!

A-32 Mrs. ——. Elderly man and wife. Old fashioned house.

"In an old fashioned house like the one I live in, there is not much use in having a convenience like that. There is just the two of us and I don't think that we could make up for the great expenditure of money at the output. I won't live to see the day when everyone will have one, but that day is not far off. I lived in —— when there were dealers around selling other 'conveniences' just as 'luxurious' as the electric refrigerator. And the day will come when even the refrigerator will go out just as the icer is going now. But what about our power here in ——. It goes off whenever it storms or blows. I think that they are very expensive but all good things come high."

How Long is Service Furnished Free?

A-33 Mrs.—— Nice place, but not especially new nor modern looking.

"I have heard more about electrical refrigeration lately than I have about any of the other inventions that have come out within recent years. Everyone seems to be talking about them. I have none because I can't afford one. If the price comes down within a short time, then I shall afford one at the very soonest possible date. It seems that the company would make more and then sell them to more people who would want them if they would only cut the prices. What about the length of service that is furnished free? How long is a motor guaranteed to last? If it goes wrong within a certain time, the owner ought to have some safeguard to protect him."

How Much Is Added to Installment Price?

A-34 Mrs.—— Owns a rooming house for business people.

"No, I haven't an electric refrigerator merely because of the price and I haven't thought any more about it. There are so many current expenses to keeping roomers that one hasn't the ready cash to buy any article that costs so much all at one time. Can you get them on the installment plan or is there so much added to the price that way that it really wouldn't pay to get one that way? I hear that they are not any cheaper even after the initial expense. What about all the advertising and salesmens' talk to that effect? They should not say that if it is not true to what the actual experience teaches."

Can a Maid Attend to One?

A-35 Mrs.—— Live in their own hotel.

"What do they cost after the initial expense? Could you get large enough one to use here in the hotel? Would there, be any saving when you count in the cost of installation and the interest on the investment? Would there by any trouble for a maid to attend to one? We are gone a good deal of the time and I wonder if they could attend to one. If anything went wrong, would they be able to have it fixed right away?

What About the Motor Making Odors?

A-36 Mrs. —— Very small house, but neat appearing.

"I haven't one because I haven't the money to put into it just now. Can you get sizes small enough so that they will fit into small wall-spaces? What about the motor making odors? Will the people who install them guarantee that they will be good for a certain length of time or are you given no guarantee? What about the danger from electrical shocks? I have no desire to put in a machine that will have to be handled in fear."

Are All the Motors Made by the Same Firm?

A-37 Miss —— Large, old-fashioned house. Middle-aged woman, unmarried.

"I haven't one here because I have no room for one. My wall-space is very cut up and irregular here in this old-fashioned house so I am not planning on having one until I move or build. My cousin, Mrs. ——, has one and she thinks that they are the only thing to have and that every one *should* have one. She says that they are the best in convenience as well as purity. I feel that, myself, only I can't afford one now. What about the inside of the electric ones, are they made any differently than others except that the motor is included? Are they any better in construction? What about the make that is considered the best, does it go according to the box or the motor, or are all of the motors made by the same firm?"

Are the New Ones Noisy?

A-38 Mrs.——Two families living in this one-story house. Rather an old affair, but very neat inside.

"Neither of us have them because we can't afford them. Anyway this house is too small for anything like that. We have a lot of trouble here with keeping things from sagging or warping. I wonder if these new expensive ones would warp too. It must be from the uneven floor or from the dampness here. Are these new ones noisy or does a person become accustomed to them?"

A Few Words About California

A-39 Mrs.—— An old lady, the mother of the owner of the home. She was eager to tell about things out in California where she came from.

"Well, out there in California you hear a lot about electrical refrigeration but there doesn't seem to be so much excitement about it out there as you find here. I hear that the people here are all very enthusiastic about them. You will find that every different locality in the various sections of the country all have their own little individual troubles with them, too dry, or too wet, or too bad electrical storms, or something. But I find that all over they are well liked as the general rule."

WHAT MEN WANT TO KNOW ABOUT ELECTRIC REFRIGERATION

B-40 Mr._____

"What is the standing of the maker? What about the construction? What is the number of the parts? What makes it cold? Is it complicated? What's inside the machine? What is the chemical used?"

B-41 Mr._____

"What could I do with my present ice-box? I have a very good refrigerator now and I would want to do something with it. What is the cost of operation? How much service will I get? I understand they give a lot of trouble. At least, my cousin's does."

B-42 Mr._____Three adults. Large, old fashioned house.

"What is the price and upkeep? What is the possibility of trouble? How much room is there for food? How much space is needed for the engine?"

Does It Interfere with Radio?

B-43 Mr._____Two adults. Ordinary means Own their home.

"What size machine should I have in my home and what is the box going to cost? Is the cost of electricity the only upkeep expense and about how much a month will it be? How much noise will it make? I understand they are quite noisy. I hear they interfere with radio reception. Can I buy it on time payments?"

B-44 Mr._____About 50 years old, comfortable means, rented apartment.

"Only two things—the original cost and what is the cost of operation?"

What Makes It Cold?

B-45 Mr._____About 35. Child of two. Rented apartment.

"I'm not interested in electrical refrigeration because there is a good ice box furnished with my apartment. If I owned a home, I might be interested. First, I would want to know the cost and upkeep. Also, how does the machine run? Was the temperature in the old boxes considered less even? What makes it cold? How reliable is it?"

B-46 Mr._____About forty. Two small children. Ordinary means.

"Really I am not interested, haven't given it a thought. But I'd think it would be very convenient. How large are they? How would one fit in my kitchen? Would the original cost and upkeep, figured over the period of years, be more or less than ice? We have only one ice dealer in our town so he is quite independent, and right here is where an electrical icer would make a hit with me."

How Far Away May the Compressor Be Located?

B-47 Mr._____Live in a rented house.

"What is the comparative cost, initial and operating? How is the operating different from the operation of the icer? How much attention will I have to pay to it? Where is the location of the compressor of the unit? How far could the compressor be from the unit or cooling chamber?"

B-48 Mr._____Owns his home.

"Operating costs. . . how much attention does it need? How often will it need repairs? Can I get quick service, efficient service when I need it? Is it noisy? Is it necessary for the motor to run continually to maintain an even temperature?"

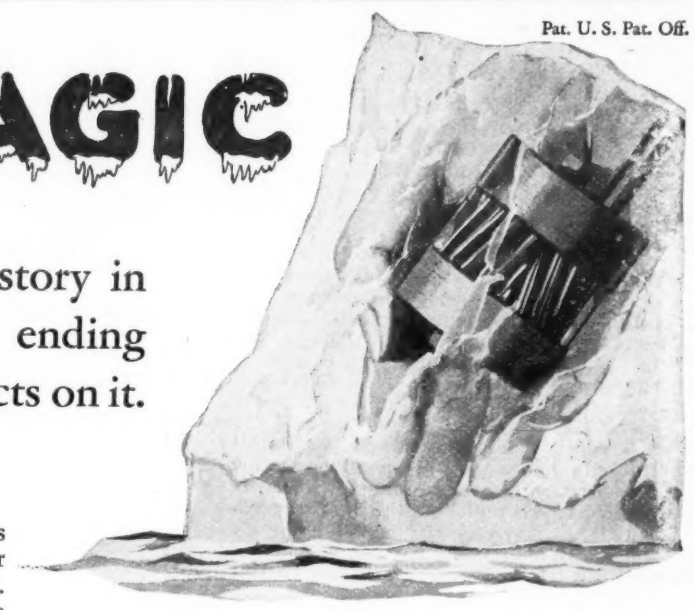
How Does the Original Cost Plus Upkeep Compare with Ice?

B-49 Mr._____Live in an apartment.

"Does the original cost plus the upkeep and power compare favorably with the present costs of ice, with due regard to advantages of electric refrigeration which takes place when ice delivering man is dispensed with? I would decide about paying cash or installments depending on the difference between the two, namely whether the interest rates charged due to deferred payments were reasonable or not."

Pat. U. S. Pat. Off.

COLD MAGIC



An Electric Refrigerator story in two parts with a happy ending for every merchant who acts on it.

PART I.

Not all stories begin with "Once upon a time . . ." This one begins within the last ten years when a certain engineer decided that electric refrigerators were much too complicated.

Although there were many who laughed at his ideas, there were a few who gave him help, who agreed with him that a machine to go in the kitchen should be of elemental simplicity.

After years of research and experiment and the spending of hundreds of thousands of dollars, such a machine was at last developed . . . a machine literally *cold magic.*

Its makers were satisfied not with a reduction of the number of moving parts to 20 or even 10, but insisted on keeping at it until the number had reached the irreducible minimum, namely 2.

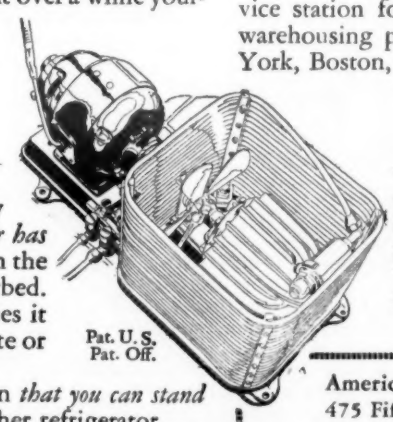
In these two parts there is a story for the electrical dealer, the like of which has never been presented to him before.

PART II.

Here is a unit of sale *twenty or thirty times the average in size.* Compared with it, such items as electric irons or toasters or percolators are mere chicken-feed. It takes 100 irons to equal one sale of an ElectrICE.

That there is an immense market for electric refrigerators, you know as well as we do, and the ElectrICE gives you the opportunity to capitalize this market to the full. For it is *right,* both from the merchant's standpoint and the consumer's standpoint.

The dullest customer sees in a moment that a machine of such marvelous simplicity is better for him than one with a lot of complicated parts. (Think this point over a while yourself, and any number of ideas will occur to you for driving this simplicity argument home to the prospect).



Pat. U. S. Pat. Off.

It is rare, indeed, to find any product with one feature of such clear superiority over competitors, yet the ElectrICE has other exclusive features which are as distinct and definite as "only two moving parts." For instance, *it never has to be de-frosted.* The uniform temperature in the storage compartment need never be disturbed. IT IS SELF-DEFROSTING. Neither does it require a brine tank. Nor pistons to vibrate or reciprocating valves to tap annoyingly.

The ElectrICE is so free from vibration *that you can stand a nickel on end upon it.* Try this on any other refrigerator.

As to the cabinet, the ElectrICE is in a class by itself. This company is one of the two oldest and largest makers of fine refrigerators in the world with assets of two and a half million dollars.

It produces 160,000 refrigerators a year of many types and sizes.

It has the facilities to produce the finest cabinets on the market and it *is* producing them. A casual examination of these cabinets will tell you some of their advantages. *But it will not tell you all.* It will not tell you of the solid cork-board insulation . . . cork-*board,* mind you, not granulated cork . . . nor of the extraordinary thickness of this board. On the top and sides this board is two inches thick, and on the bottom three inches thick. No more effective insulation could possibly be provided.

There are other features which in this space we haven't the room to describe. But one fact you can rely on . . . the ElectrICE is right from the *consumer's* standpoint.

And that is half the battle from *your* standpoint. A refrigerator with so many and such distinct advantages takes many a prospect by storm.

But are its prices right? They are. *A gross profit roughly of $100 a sale.* A chance to turn your money rapidly because of a special ElectrICE financing arrangement. The customer pays in installments, *but you get the cash at once.* Great factories to keep you well supplied with a full line of wood, steel and porcelain models. Two weeks' training at our service station for each member of your staff. Already four warehousing points ready to make prompt delivery—New York, Boston, Chicago, St. Louis.

* * *

So there is your story in two parts, although what we have printed here is more like a synopsis. You should have the *complete* facts, and these we are anxious to send you. Merely fill in the coupon below and mail to us, or write "Facts, please," on a sheet of your letterhead. Then you will hear from us.

ElectrICE
Reg. U. S. Pat. Off.
the simplified electric refrigerator

American ElectrICE Corporation DEPT. 310
475 Fifth Avenue, New York, N. Y.

Please send me further facts about the ElectrICE and your proposition for dealers.

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E. E. 10-26

Mechanical Refrigeration Used First in Southern States

Absorption Machines Imported from France when Civil War Cut Off Natural Ice Supply from the North

By A. R. Stevenson, Jr., Engineering General Dept.
General Electric Co., Schenectady, N. Y.

Refrigeration is the opposite of heat. It is interesting to compare Nature's method of storing them both. During a geological age called the "Carboniforous Period," the sun's heat produced a luxurious plant growth which absorbed carbon from the atmosphere. This plant growth, buried under the ground during long ages, petrified into coal. The coal mines are reservoirs where the sun's heat was stored. The burning of a piece of coal may be considered as the releasing of the "bottled sunshine" of a long past age. Unfortunately, there is no simple, effective means by which the heat of each summer can be stored locally for use during the following winter.

But, in ice, the cold of each winter may be stored locally for refrigeration during the succeeding summer. Has it ever occurred to you that in ice, nature has furnished us with an unusually convenient means for cold storage? It freezes on the surface of lakes where it can easily be cut and floated to a warehouse. It is not necessary to dig into the ground, although sometimes a few feet of snow has to be removed.

First Large Ice House Constructed in 1805

Although it is said that Alexander the Great transported snow from the mountains to cool the wine for his soldiers, the use of ice for preserving food products was not very general until the beginning of the nineteenth century, and even today, the use of ice for refrigeration is not very extensive in the countries of Europe.

After the construction of the first large ice house, in 1805, there grew up rapidly an industry which harvested the ice in our northern states and shipped it to the south in sailing vessels. As early as 1850, the city of New Orleans alone required over 50,000 tons annually, at prices ranging from $15.00 to $20.00 per ton. The ice harvest in the State of Maine during the winter of 1879-80 amounted to 1,300,000 tons, largely supplied by twenty-six firms on the Penobscot River and fifty-three firms on the Kennebec River. In 1880, there were about 160 ice houses on the Hudson River.

The Civil War cut off the supply of natural ice to the southern states, and the small amount of ice available sold at about five cents a pound. This at least partially explains the interest in artificial production of ice which sprang up in the south about 1863.

A century ago, natural ice was almost the only commercial means of producing refrigeration, but today almost everywhere artificial ice is replacing the natural product. The banks of rivers and lakes are lined with abandoned ice houses. There is not time to mention all the reasons for this change. The three chief reasons are:

1. Rise in labor costs
2. Improved utilization of power
3. Improved generation of power

Labor was the largest factor in the cost of natural ice. It is only one-quarter of the cost of artificial ice made in a modern electrically operated plant.

Intermittent Absorption Machine Invented by Carre in 1860

Ferdinand Carre invented the intermittent absorption machine in 1860; and in 1862, Carre made the process continuous by the addition of an absorber and circulating pump, as illustrated in Fig. 1.

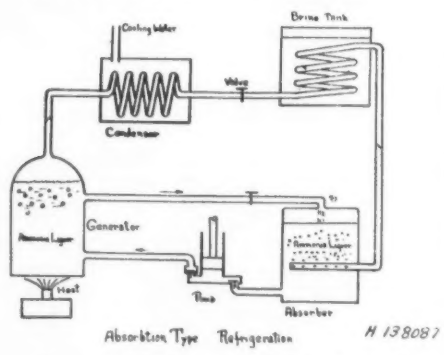


FIG. 1—ABSORPTION TYPE RFFRIGERATION

It was only a couple of years after this invention that several machines of the Carre system were imported to the southern part of the United States. There are many ice plants operating on this absorption principle today.

By far the great majority of ice plants today, however, are of the compression system. The ammonia compression machine was patented in France in 1864 by the same Mr. Carre who had previously invented the absorption machine. But it was not until about 1870 that Dr. Carl Linde, in Germany, and David Boyle, in America, produced the first practical compression machines. These were, of course, steam driven and the general arrangement is shown in Fig. 2.

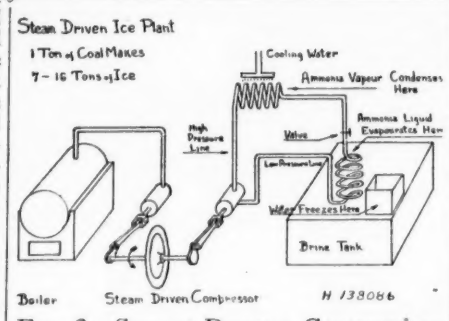


FIG. 2—STEAM DRIVEN COMPRESSOR

Distilled Water Originally Considered Necessary to Make Clear Ice

It was originally thought that clear ice could only be made from distilled water. Part of the distilled water was obtained by condensing the exhaust steam from the engines. Although only 65 lbs. of steam would be required for the mechanical work of producing 100 lbs. of ice, 100 lbs. of steam had to be condensed to provide 100 lbs. of distilled water for the ice. About 15 lbs. of coal would be burned under the average small boiler to produce 100 lbs. of steam. Therefore, the distilled water plant seldom produced more than 6½ lbs. of ice per pound of coal.

It was later discovered that clear ice could be made from raw water by agitating the water with compressed air during the freezing process. Under this condition, about 65 lbs. of steam were required to run the ammonia compressors, and perhaps 10 lbs. of steam were required to run the air compressors. Therefore, only 75 lbs. of steam were used in producing 100 lbs. of ice. Thus, the small steam-driven raw-water ice plant could produce about 9 lbs. of ice per pound of coal.

Due to the innumerable improvements in generating apparatus, much less coal is used for the same power, and the labor cost is reduced by labor-saving devices. It has thus been possible for the price of electricity to remain nearly constant, while the prices of almost everything else, including coal and labor, have gone up. Because of the low price of electric power, the majority of new ice plants and many of the old steam plants are being electrified.

ELECTRIC REFRIGERATORS MAKE RENTING EASIER

Real Estate Men Say Tenants are Willing to Add Operating Cost To Rent

One of a series of interviews by The Society for Electrical Development with people who know electrical refrigerators by experience.

People who use electric refrigerators in their own households are not the only ones who appreciate them. Real estate dealers and landlords do, too. Such refrigerators are in common use now in so many places that renters are beginning to ask for them during the annual house-hunting seasons in late April and late September. A man who conducts an important renting agency and who owns a number of apartment houses in a city of about half a million had this to say about the matter:

"There has been so much shifting of tenants toward newer buildings that I have had to bring some of my older buildings up to date in order to hold good tenants. Since the kitchen arrangement and equipment is of great importance in swinging a favorable decision I installed an electric refrigerator system in each of these two apartment buildings. The ladies are very pleased.

"In one building I added $2.50 to the amount of the rent. There was a little complaint at first but no one moved out. One lady told me her ice bill used to be at least twice that each month during the hot weather, and now she has the greater convenience of perfect refrigeration, so she feels that I practically reduced her rent."

In a suburb of Milwaukee is another real estate man who handles a great many rentals. He, too, has noticed the influence of electric refrigeration on the business of keeping houses and apartments tenanted.

"I'm always glad," said he, "to get a high grade house equipped with an electric refrigerator because it spells 'class' to prospects. When a prospective renter finds a combination of an oil burner and an electric refrigerator it's more a matter of making terms than looking further. The women out here want all improvements. In homes with these two items automatic, and an electric washing machine they do the work in the home themselves and quit talking about maids.

"My cousin operates in town. He has two apartment buildings identical in plan and finish, except that one has electric refrigerators. He has a waiting list for one, but usually vacancies in the other. No doubt about it, what he has lost on vacancies would have installed the plant in the other building. Renters go after the comforts, every time."

Wants to Build His Own Electric Refrigerator

The following letter received by Factory Magazine has been referred to ELECTRIC REFRIGERATION NEWS:

"I am interested in the subject of electrical refrigeration but do not care to have it at the current cost for the commercial product. I would like if possible to do away with the 'family ice box' in my home provided the cost is not too great and have in mind constructing a refrigerating unit by myself. I may be wrong in my surmise, but I am of the opinion that the construction of one is far less onerous than most of my friends would have me believe. I am, therefore, writing to you for guidance and suggestion.

"Do you think the construction of a refrigerating unit can be compared favorably so far as final cost is concerned with the marketed article?

"Can you suggest the names of any text books in which I might find plans, diagrams, specifications or general articles on household electrical refrigeration?

"Would the construction of such a unit trangress on any patents now held by commercial organizations?

"Can you give me a list of the essential parts necessary, together with an approximation of their cost?

"Your helpful suggestions or information will be greatly appreciated by. Yours very truly, (————————)."

Answer: Brother, we fear you have a bum hunch. It has cost several big companies a lot of money to get their first *good* refrigerator. You will find it much cheaper to buy one ready made.

HELPFUL ARTICLES

Ideas and Experience from Electrical and Other Fields

"Health, Economy and Convenience are Emphasized in Cleveland's Electric Refrigerator Campaign.—Cleveland's $15,000 electric refrigeration campaign shows how a local merchandising campaign may be made to tie in with the national market development program of The Society for Electrical Development.

"The Cleveland campaign also serves as a valuable illustration of the fact that, before electric refrigerator distributors and dealers can hope to take any great number of orders, they must do the educational work necessary to compete with other merchants, equally anxious to get the consumers' dollar. How Cleveland is doing this educational work should be an inspiration to electric refrigerator merchandisers everywhere."—Electrical Record, Oct., 1926.

"Electrical Market Development—A five-year plan for the intensive development of the electrical market by products and communities, embracing a series of follow-through programs under a new all-industry organization formed by merging leagues and the Society.

"Part 1. Purpose of the Plan:

"1. Aims to maintain and perfect the service for which both The Society for Electrical Development and the local leagues were established, that is, a central organization through which market development service can be organized and maintained on a national scale, and a local organization through which the central service may be applied locally.

"2. Creates an all-industry organization for co-ordinating cooperative market development effort among manufacturers, jobbers, contractors, dealers, and central stations.

"3. Merges existing local leagues with The Society for Electrical Development, as local chapters of it.

"4. Organizes local chapters of the Society where local leagues do not now exist.

"5. Proposes to conduct general promotion and publicity activities to develop the electrical market as a whole.

"6. Proposes to conduct, as desired by any group or groups in the industry, specialized programs to promote the sale and use of any particular electrical product or application of electrical service.

"7. Has listed thirty-four such programs scheduled for five years' continuous activity. Work is already under way on four of these commodity programs."—Electrical Record, Oct., 1926.

"Aren't We Getting Too Hard-Boiled About Christmas?—By P. K. Crocker, advertising and sales manager, John Schoonmaker & Son, Newburgh, N. Y.

"'Beat last year!' has become such a universal slogan in connection with all kinds of retail business that, as a result, Christmas advertising and Christmas appeals have become almost mandatory in their tones. Every page of every newspaper shrieks forth its commands to Buy! Buy! Buy! and Give! Give! Give! until what was originally known as the Spirit of Christmas has become well nigh lost in a welter of commercialism and gift-suggestions.

"In order that stores may progress and that retail business may thrive it is, of course, necessary that holiday sales-quotas be met. But is there not some way in which this objective may be accomplished without the continual hawking of Christmas and Santa Claus and the kiddies that sweeps over retail announcements from Thanksgiving until the twenty-fourth of December? Is there not some way in which commercialism may be subdued and the real spirit of Christmas emphasized without, at the same time, impairing the results which sales executives desire?

"Mr. Crocker, in his article from the Data Book of the Sales Promotion Division of the National Retail Dry Goods Association, gives very clearly the details of one way of doing this."
—Retail Ledger, Oct. 1, 1926.

"A Car or a Maid?—Only the other day I ran across an angle in connection with the determination of the size of installment payments which should be of interest to stores that are featuring such articles as radios, electric washers, etc., on the partial payment basis.

"One of the leading automobile companies, in selling its cars on the plan used by some 95 per cent of all those who buy automobiles these days, absolutely refuses to discuss monthly payments. The basis of the transaction is a weekly payment which figures out pretty close to $12 a week.

"See the idea? Servant's wage $12 a week or thereabouts. Car payment $12 a week or thereabouts. If the burden of the payment gets to heavy, why, says Friend Wife, "We'll get along without a servant and keep the car." And there you are! —*Retail Ledger*, Sept. 1, 1926

DETROIT TO HAVE COOPERATIVE ELECTRIC REFRIGERATOR EXHIBIT

Miss Sarah Sheridan, vice-president and sales manager of the Detroit Edison Company, has recently approved plans for a cooperative exhibit of electrical appliances for the home, prepared by the Electrical Extension Bureau of Detroit. Ground floor space in the new Michigan Theatre building has been secured for the exhibit, in which electric refrigeration will be prominently featured. The arrangement will provide for the display and demonstration of the leading makes of appliances. Advertising will be used to attract visitors, and special invitations will be extended to social organizations and other groups of women. Harold Shaw, executive secretary of the Bureau, will have general charge of the exhibit.

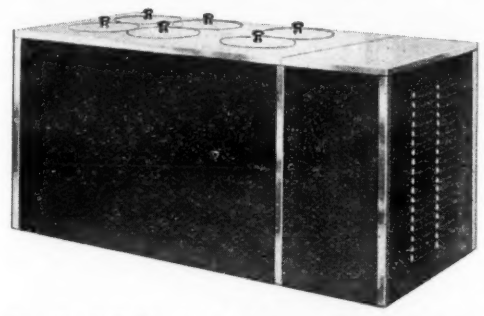
M. A. LASSEN, M. E.
CONSULTING EEGINEER
Member
Amer. Soc. Refgn. Engrs.

320 BEAUBIEN ST.
PHONE CADILLAC 0061
DETROIT, MICH.

ENGINEERING SERVICE—PATENTS AND INVENTIONS DEVELOPED, LABORATORY TESTS AND REPORTS—EXPERIMENTAL MACHINE WORK COMPLETED IN WELL EQUIPPED SHOP BY EXPERT MECHANICS. EXPERIENCED CONSULTATION SERVICE. YEARS OF EXPERIENCE WITH PRESENT SUCCESSFUL MACHINES.

Correspondence invited.

"Attention" Electric Refrigeration Mfr's



Complete Ice Cream Cabinets and Parts for Same

Complete Cabinets to your specifications, delivered ready for installation of your refrigerating unit.

OR

Parts to your specifications, such as monel covers, lids and trimmings; also side panels, frames, tanks, cans, etc.

Standard Cabinets of Approved Construction

PANELS—Rustproof steel finished in White Porcelain or Black Baked Enamel.
FRAMES—3/16"x1½"x1½" angle iron with strong electrically welded joints.
TANKS & WELLS—Sheet copper or sheet galvanzed irons.
INSULATION—Best grade of heavy cork board.
TRIMMINGS—Monel Metal.

Let Us Make Your Cabinets

Our efficient organization and extensive plant facilities, with experience gained in the successful quantity production of ice cream cabinets for leading manufacturers of electric refrigeration, qualify us as a dependable source with whom to contract your requirements.

We Invite Correspondence

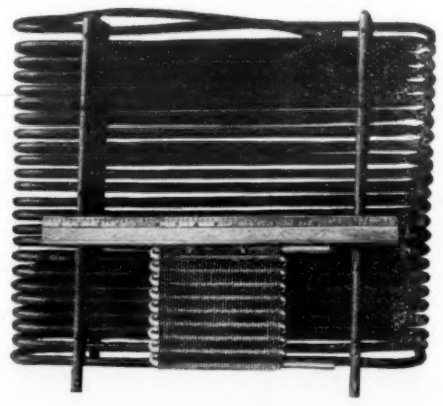
MOTORS METAL MFG. CO. DETROIT, MICH.

FLINTLOCK CONDENSERS
AIR COOLED

The problem of handling air cooled condensers in cramped space, or where it is difficult or impossible to secure adequate air circulation over the coils has been solved in a most satisfactory manner by Flintlock.

These compact, sturdy, efficient air cooled condensers occupy less than a sixth of the space necessary with the coil type device. Head pressures have been reduced to an absolute minimum called for by the temperature of the surrounding air. The motor pulley fan directs a steady flow of air over the entire surface of the condenser. Machines which have been complete failures in warm climates may be brought up to their required efficiency by substituting the Flintlock Condensers.

We work with your Engineers to secure the utmost in results. Don't handicap a good machine with an inefficient condenser.



The cost? No more than your present type condenser and there is no comparison in results. Flintlock condensers have an absolutely scientific distribution of metal both in the outer and inner fins to squeeze out the last B. T. U. in the gas in the shortest possible time and with the least mechanical effort.

Modernize YOUR UNIT with a Flintlock.

FLINTLOCK CORPORATION
Buhl Bldg. Detroit, Mich.

F. B. RILEY, *Direct Representative*
320 BEAUBIEN STREET DETROIT, MICH.

Refrigeration Science Explained In Service Training Course

Second Lesson Deals with Theory of Heat, Measurements of Temperature and Relation to Pressure

Over three thousand students are now enrolled in the Nizer Service Correspondence School, a complete course of training in 24 lessons now being offered free by the Nizer Corporation, Detroit, indicating the great interest in electric refrigeration and the widespread desire to become informed regarding the detailed operation of the equipment.

The course is especially designed to prepare men connected with the ice cream industry to become competent in the installation and servicing of electric ice cream cabinets which are being introduced so rapidly all over the country. The information and training will be equally valuable, however, to those interested in the field of household refrigeration, since the principles of operation are largely identical.

The second lesson of the course, which follows, is made available to readers of ELECTRIC REFRIGERATION NEWS by courtesy of the Nizer Corporation. The first lesson was printed in the issue of September 11, 1926.

Lesson II—Heat, Its Nature and Measurement—Theory of Heat

Copyright 1926, by Nizer Corp.

A study of the theory and general laws of heat is essential to an understanding of refrigeration, for refrigeration is nothing more than the cooling of a body by the removal of a part of its heat from it. This lesson will therefore concern itself entirely with heat.

For a long time the exact nature of heat was not clearly understood and several different theories as to its nature were developed. At the present time the so-called "Molecular Theory" is generally accepted. The molecular theory of heat is based on the molecular theory of matter itself, which latter theory states that all matter is made up of innumerable minute and separate particles called molecules. These molecules are so small that the most powerful microscope cannot disclose them to us nor do we expect that any microscope will ever be developed which will enlarge them sufficiently to bring them to our view. Molecules are the smallest independent particles of matter that can exist.

The small particles or molecules which go to make up all matter are not attached to each other but each one is actually separated from its neighbor by a space which in some instances, is larger than the molecule itself. Furthermore the molecules are not stationary but each one is continually moving to and fro very rapidly within the limits of its space.

We now come to the connection between the molecular theory and the theory of heat, for the intensity of heat, or the hotness of a body, is said to depend entirely upon the rapidity of the motion of the molecules within it. Thus, in a piece of iron which is very cold, the motion of the molecules is comparatively slow. As the iron is heated the molecular motion becomes more rapid and continues to increase as the temperature of the iron is increased. The melting of the iron, which takes place when the temperature is raised sufficiently high, is said to be the result of the molecules moving so rapidly and becoming so far separated one from the other that they cannot longer hold the body in a rigid form.

Evaporation of a substance is the result of additional heating which forces the molecules so far apart that they lose nearly all their power of attraction one for the other and the vapor which is formed no longer has a definite volume but will expand and completely fill any space which is provided for it.

To one learning of the molecular theory of heat and matter for the first time it no doubt appears far-fetched and fanciful. It must be remembered, however, that it is the theory now generally accepted by the leading scientists of our age and further than that, it is a theory which seems to be in agreement with the facts regarding heat as they are now known to us. However whether or not we accept the molecular theory of heat makes not the slightest difference in the work which is to follow, for the laws of heat and refrigeration remain unchanged regardless of the manner in which we attempt to account for them The subject is included here because it seems that the student must, at some time or other, be confronted with the question What is heat? and the course could not be considered complete unless it gave him some answer.

Whether we explain it by the molecular theory or by some other, heat remains a form of energy. Since it is a form of energy and not a substance we cannot measure it directly as we would weigh a quantity of water but we must measure it by the effects which it produces. For instance we know that the addition of heat to a body will change its temperature and temperature change therefore becomes one of the measures of heat. Heat and temperature are so closely related that the two meanings are often confused and the student must guard against this error. Heat is the energy itself. Temperature is the result of it. Temperature is the measure of that condition of a body as it affects our sense of hotness or coldness.

The Unit of Heat

The unit of heat measure used in this country in connection with refrigeration is the British Thermal Unit, commonly written and referred to as the B. T. U. One B. T. U. is the amount of heat required to be added to one pound of water at a temperature of 39° to raise its temperature one degree on the Fahrenheit thermometer scale. Roughly, it is the amount of heat required to raise the temperature of one pound of water one degree. A better idea of the amount of heat contained in one B. T. U. may perhaps be had from the fact that it requires about 970 B. T. U. to completely evaporate one pound of boiling hot water. Also it requires the extraction of 144 B. T. U.'s from a pound of water at 32° to freeze it into ice at the same temperature.

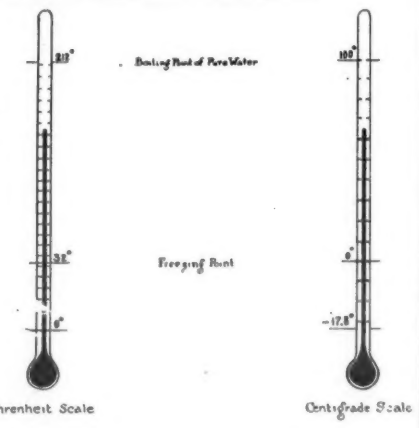
Remember: B. T. U.'s cannot be measured directly by a thermometer.

As was stated in a previous paragraph, temperature is a measure of the hotness of a body. More correctly stated perhaps it is the measure of the intensity of the sensible heat of a body but it is not a measure of the amount of heat in a body. One body might well have a higher temperature than another and at the same time have less heat in it than the other body. A striking example of this is found in the fact that three pounds of ice contain more heat than does one pound of boiling hot water. The block of ice in the illustration is 180° colder than the water yet contains about 170 B. T. U.'s more heat than it. As an additional example consider a pound of water and a pound of iron both at a temperature of 70°. The water in this case contains almost 350 B. T. U.'s more heat than the iron.

Measurement of Temperature

The accurate measurement of temperature is a difficult matter and is especially so in the extremely high or extremely low temperature ranges. For all our purposes, however, the ordinary mercury thermometer serves very well and accurately. The mercury thermometer measures temperature by reason of the fact that mercury, in common with nearly all other substances, expands when its temperature is increased. The expansion of the mercury forces it to rise in the thermometer stem and its height in the properly marked stem indicates the temperature.

There are several thermometer scales in existence but the Fahrenheit scale is most commonly used in this country and is the one which we shall use in all our temperature measurements. It is possible, however, that the student will also come across the Centigrade scale in his reading, as it is used very largely in scientific work. The following sketch illustrates the two scales and gives the important points in each. The student should learn these points.



Limits of Temperature

The question of the high and low limits of temperature or hotness naturally presents itself in connection with a study of thermometry. If we agree that the temperature of a body is dependent upon the amount of heat in the body it seems that there can be no upper limit to temperature for no matter how hot a body may be conceived to be the addition of more heat will cause it to be still hotter. There is, however, a low limit of temperature: If a body has a definite amount of heat in it and then has all its heat removed it will be impossible to still further cool the body and the absolute zero of temperature will have been reached.

Treating the question of low temperatures from the Molecular Theory leads us to the same conclusions. If the temperature of a body is entirely dependent upon the velocity of its molecules it must follow that when the molecular motion has been stopped entirely the absolute zero of temperature must also have been reached and heat must then be entirely absent. The absolute zero of temperature has never yet been reached and probably never will be, no more than it has been possible to attain a perfect vacuum; but scientific experiments and calculations lead to the belief that it is at a temperature of 460° below zero on the Fahrenheit scale. Temperatures within a very few degrees of this extremely low point have been reached and it is interesting to learn of the changes in characteristics which take place in bodies subjected to such intense cold. A piece of lead, for instance, at a temperature anywhere near absolute zero will become hard and brittle as steel and will actually ring like a bell if struck. The electrical resistance is also greatly decreased at very low temperatures and is thought to vanish entirely when the absolute zero is reached.

The measurements of the very high and low temperatures just mentioned cannot be made by the use of the mercury thermometer, for its ordinary usefulness is limited to a range from about —38° F. to 900° F.

For temperatures lower than —38° some low freezing substance such as alcohol must be used in the thermometer and for extremely high temperature measurements a pyrometer of some sort is generally resorted to.

Laws Governing Heat Transmission

The laws governing the behavior of heat, at least those with which we need concern ourselves, are simple. Perhaps the most important one is that heat will always flow from a body of higher temperature to one of lower temperature. It will never, of its own accord, flow in the opposite direction. This is really a very simple law and is familiar to most of us, but is worth giving some thought to for if the student can grasp it in its entire significance and application it will greatly help him in understanding the refrigeration problem. A few other simple rules apply to heat transmission.

Radiation, Convection and Conduction Explained

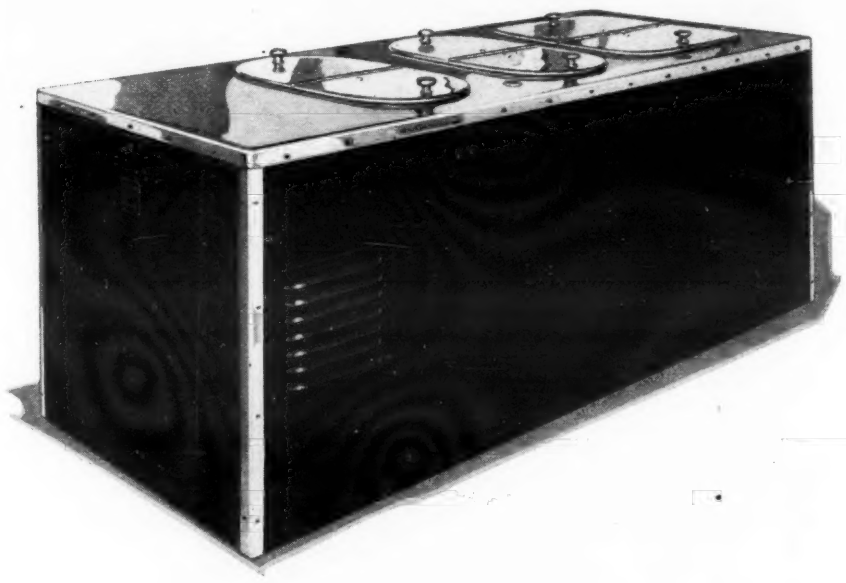
If one end of an iron rod be heated red hot and then withdrawn from the fire we know that it will soon lose its heat. There are three ways in which an object can lose heat. They are radiation, conduction and convection. If the heated iron rod is placed in the center of a room in which there are absolutely no air currents we know that heat will nevertheless leave the bar and pass through the air in just the same way that light waves are transmitted from a lighted lamp. The loss of heat by this method is termed *radiation*.

If the same heated rod is placed in a room through which a strong current of air is flowing it will not only lose its heat by radiation but, independent of this, it will lose additional heat through having it carried away by the moving air current. The loss of heat in this manner is called *convection*. A large part of the heat taken from the ice cream in the electric ice cream cabinet is carried to the evaporator by means of the convection currents set up in the brine solution, for convection currents may be set up in liquids as well as in air or other gases.

In addition to the two methods just mentioned by which a body can lose heat, we know that in the case of the iron bar in question, some of the heat from the hot portion will pass through the bar itself to the cooler part. Heat transmitted through a body in this manner is known as *conduction*. The rate of conduction of heat by a body is dependent upon the material of which the body is composed. For instance, heat will pass through a piece of copper very readily but will have considerable difficulty in getting through a piece of cork of the same size. Materials that have a very low heat conductivity are called heat insulators and play a very important part in refrigeration work. Later on in the course some of the more common materials will be considered in the light of their value as heat conductors and insulators.

Temperature and Pressure Relations

Under the discussion of temperature it was brought out that most bodies expand when heated. If the expansion is restricted or interfered with, great forces are set up by the body in its effort to expand. This property in connection with expansion is not confined to liquids and solids alone, but appears, in even a more marked form, in the case of gases. Every gas confined in a closed vessel exerts a certain pressure against the walls of the vessel. What the pressure is depends upon the amount and temperature of the gas. If the temperature of the inclosed gas is increased, the natural tendency is for it to expand and occupy a larger volume. If, however, the expansion is not permitted by reason of the rigidness of the inclosing vessel, the pressure of the gas is increased. This thought is of such importance that a law has been formulated to express it. The law states that the pressure exerted by a gas in a closed vessel is directly proportional to the absolute temperature of the gas. This law should be given considerable thought by the student, for not only must it be taken into consideration when designing equipment in which gas is contained so that it may be made strong enough, but it is also the law upon which the operation of the control system of a great many automatic refrigerating systems is based, the Nizer being among them.



The Combination Small Stops Have Always Wanted

This self-contained combination cabinet is especially designed to fill a long-felt need at the smaller stops. It combines a compartment for keeping bulk milk, an ample stock of bottled goods, or both, with either 2 or 4 holes for ice cream. A special Nizer feature allows the ice cream to be kept at the efficient low temperature of all other Nizers, while the temperature in the bottle-goods department is always slightly above freezing. And it is as economical as it is efficient. The greatest modern development in electric ice cream cabinets!

Now! Nizer answers the demands of your smaller stores

Nizer has a solution! Now, you can equip even your smallest stops with Nizers. Economically! Profitably!

New Nizer Model E—Small, Economical, Simple

Especially designed for small stops, the new Model E cabinets are 2-, 3- and 4-hole in size. The size of the compressor has been held to a minimum, occupying an almost unbelievably small space without sacrificing capacity. They are light in weight and easily installed—just attach to an ordinary light socket. Portable, too! And they are quiet in even the smallest shop!

This is the simplest of electric ice cream cabinets—few moving parts, and without noticeable vibration. Easy to service—just one screw to loosen and one to remove! It operates on a small 1/6-h.p. motor, and because of its scientific engineering is thoroughly efficient. 215-lb. ice-melting capacity.

Current consumption is reduced to a minimum and the prices are surprisingly low. A small investment, in keeping with the business you get from smaller stops. This is just the cabinet to gain the good-will of smaller stops, at low cost. Satisfy their demands. See the Nizer representative at one of the branches below, or write for a descriptive folder.

NIZER

Reg. U. S. Patent Office

THE PIONEER ELECTRIC ICE CREAM CABINET

Sold only to or through ice cream manufacturers by Nizer Corporation, Division of Electric Refrigeration Corporation, and in Canada by Kelvinator of Canada, Ltd., London, Ontario

Nizer Sales and Service

7424 Mackie Street, Detroit
816 Sharples Bldg., Chicago
23 Houston St., Atlanta, Ga.
1 West Forty-seventh St., New York
4003 Wentworth Ave., Minneapolis, Minn.
1911 Washington Ave., St. Louis
620 S. Delaware Ave., Philadelphia
1916 Gorman Avenue, Waco, Texas
411 Park Square Bldg., Boston, Mass.
301 Westinghouse Bldg., Los Angeles, Cal.
701 Pacific Bldg., San Francisco

New Manufacturer Invites Advice on Distribution and Sales Policies

Sales Manager Requests Suggestions in Effort to Adopt Policies Constructive to the Industry

Sales policies of competitors are a frequent source of criticism. Except through association activities, there is little opportunity for one manufacturer to influence the policies of another. Even in trade associations, action is legally limited to recommendations and no common program may be enforced. In fact, if too many big companies adopt the same policy as a result of association meetings, and if such policies may be construed as a restriction upon competition, there is danger of federal investigation.

ELECTRIC REFRIGERATION NEWS has received a letter from a new entrant into the field, however, a company not yet in production, frankly asking advice as to the best methods of handling various important phases of distribution and sales. It is evident from the specific questions asked by the sales manager of the company that he is fully aware of the *different* methods available. He knows that there are disadvantages, as well as advantages, in each method suggested. But he desires to adopt those methods which are in line with successful experience and in accordance with the best interests of the industry as a whole.

Distributors and dealers, in addition to manufacturers, are invited to express their opinions regarding the following questions, not only for the information of the new company, but also as a constructive contribution to industry thinking.

(1) Which policy is generally adopted and found so far to be most equitable?
- *a* District manager having authority to act for the company in appointment of distributors and dealers.
- *b* District managers whose duties are to appoint dealers and at the same time build up installation and service department in the territory under his jurisdiction.
- *c* Distributors who in turn have the appointment of dealers.
- *d* Dealers direct, handling the distribution from factory to dealer to customer.

(2) How many distribution districts is the United States divided into by the various manufacturers of electrical refrigeration units?
- *a* Referring most particularly to (a) and (b) in paragraph 1.

(3) Method of shipment?
- *a* If distribution is as (a in paragraph 1) how is stock of goods handled? Is central location established, where warehouse for goods is maintained, or is stock shipped direct from factory to distributors and dealers?
- *b* If distribution is as (b in paragraph 1) is stock warehoused by manufacturer at district locality or stocked by dealers as it will have to be under (d in paragraph 1)?
- *c* If distribution is as (c in paragraph 1) must distributor stock goods for shipment to dealers or is goods shipped direct from factory?

(4) What is the policy regarding territory? In appointment of dealers, what policy is being followed?
- *a* Exclusive agencies.
- *b* Open selling to any dealer that can pay his bills.
- *c* Limited franchise.

(5) Method of payment by distributor or dealer?
- *a* Sight draft bill of lading.
- *b* Open account.

(6) What commissions are paid for distribution?
- *a* In case of distribution as (a and b in paragraph 1) what salary is paid district managers and is a per cent given him as bonus on volume of business done?
- *b* In case of distribution as (c in paragraph 1) what per cent discount is allowed distributor and in turn what discount is allowed dealer?
- *c* In case of distribution as (d in paragraph 1) what per cent is allowed the dealer?

(7) How have discounts been arrived at that will be fair to the retail outlet and still not overload the retail price of the product?

(8) Who should finance time payment leases?
- *a* The manufacturer.
- *b* The distributor.
- *c* Local dealer through financing companies.
- *d* Local dealer through local banks.

(9) Method of determining quota allotment?
In case of sub-division of the United States into ten zones, as suggested by McGraw Hill Company, what system is equitable to determine a proper quota:
- *a* For each zone?
- *b* For states, counties, cities, and towns in each zone?

(10) In retail distribution, which is the ideal outlet?
- *a* Ice manufacturers
- *b* Central station companies
- *c* Electrical dealers
- *d* Department stores
- *e* Hardware stores
- *f* Radio dealers
- *g* Furniture stores
- *h* Independent organizations for purpose of handling electrical refrigeration alone.

(11) What does experience show as the best method of selling? The high cost show room in prominent locations selling from the floor, or a trained canvasser force selling from house to house?

(12) What standards of training and method of handling have been established to build up dealers installation and service department?

(13) What standards of training have been established to build up dealers sales personnel?

(14) What methods are used to obtain prospects for sale of units?

(15) What percentage of free trials result in sales?

(16) What premium or prize does a dealer offer an old user for bringing in a new purchaser?

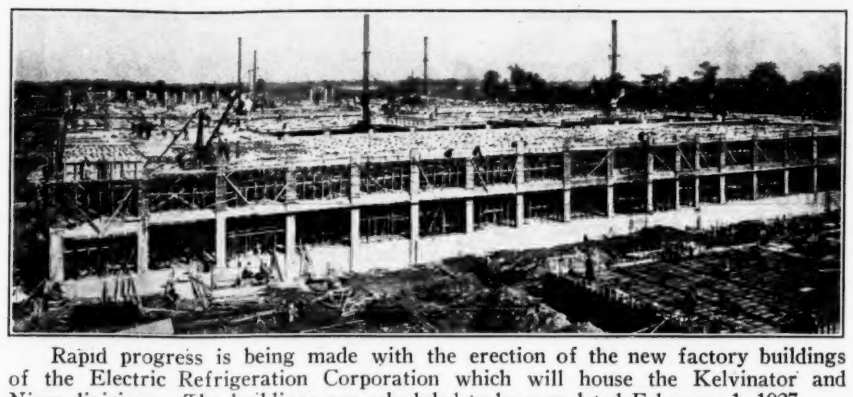
(17) In what manner is distribution through electric light and power companies handled so there is no conflict with other dealers handling the same unit?

Attractive Display in Central Station Window

PUBLIC SERVICE COMPANY OF COLORADO
PUBLIC SERVICE COMPANY OF COLORADO FEDERAL GAS COMPANY
SERV-EL
TRY IT TWO WEEKS FREE
SERV-EL
TWO YEARS TO PAY

E. W. Rowland, district commercial manager of the Public Service Company of Colorado, directed the production of the Servel window display shown above. The cost of all materials used in the display, including sign work, was about $20.00. The bear was made of beaver board and has a movable head operated by a 16-inch oscillating fan. The word "Servel" was formed out of ⅜-inch copper tubing connected with the compressor. The icicles were cut from crepe paper. The exhibit attracted a great deal of attention. It is a good example of what may be done by any dealer with limited space and at reasonable cost.

New Detroit Plant Going Up Rapidly



Rapid progress is being made with the erection of the new factory buildings of the Electric Refrigeration Corporation which will house the Kelvinator and Nizer divisions. The buildings are scheduled to be completed February 1, 1927.

Electric Refrigeration Corporation Reports $8,000,000 Assets

A. H. Goss, president of the Electric Refrigeration Corporation, Detroit, which includes the Kelvinator, Nizer and Leonard divisions, has issued the following statement regarding the financial conditions of the company:

"The tentative report of the Electric Refrigeration Corporation for the nine months ended September 30th, after all charges, including Federal taxes, showed a net profit of $2,764,921, equivalent to $4.57 a share on the 604,574 shares of stock outstanding as of September 30th. This compares with $2,471,270 for the corresponding period of 1925.

"Total current assets as of September 30th were $8,157,561 and current liabilities were $822,108.

"Heavy development expenses, which will be reflected later in larger sales volume, were charged to expenses in the last quarter of the company's first fiscal year, resulting in net earnings for the September quarter after all charges of $252,487.

"The directors of Electric Refrigeration Corporation declared the regular quarterly dividend of fifty cents in cash and one and one-quarter per cent in stock, dividends payable November 20th to stock of record October 29th."

Neagle's Name Omitted in Preceding Issue

In the account of the Waldenwoods meeting of the Electric Refrigeration Council which appeared on the first page of the Oct. 6th issue, mention was made that Francis E. Neagle, counsel for the association, gave an outline of the functions of trade associations. On the same page, under the heading "Sets Legal Limits of Group Work—Association Lawyer Lists Do's and Don'ts," Mr. Neagle's address was published in full. Through some oversight, however, his name did not appear in the article. So far the judge has made no protest against this negligence, but since he is kind enough to write his talk for Electric Refrigeration News and furthermore enroll as a paid subscriber, he is really entitled to more consideration. In order to make partial amends, we take this opportunity to call attention to the omission and also to the snap-shot of the judge taken at Association Island.

Municipal Plant Going After Farm Business

H. S. Westbrook, clerk of the village of Dunbar, Neb., reports that the municipal plant has built a ten-mile transmission line, without a bond issue, and that it has rebuilt its service station at a cost of $1,100, especially to take care of the farmers. Eighteen farmers are now connected with the line and about 30 are expected within another year. They are urging all rural, as well as town customers, to install electric refrigeration.

Advertising Agency Announcements

Campbell-Ewald Company, Detroit, will direct the advertising of Copeland Products, Inc., Detroit manufacturers of the Copeland electric refrigerators.

D'Arcy Advertising Co., St. Louis, has secured the accounts of the Kelvinator and Nizer Divisions of the Electric Refrigeration Corporation, Detroit. The D'Arcy agency will open a Detroit office in the Frances Palmer building.

Comments of Readers

"It certainly is a Freeze-Whiz."—L. D. Gibbs, Edison Elect. Illum. Co. of Boston.

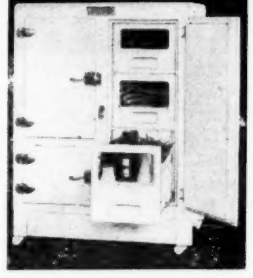
"I wish to extend congratulations on the splendid way this paper is made up."—S. Bennis, United Elect. Lt. & Pr. Co., New York.

"Congratulations on the very attractive issue of your Electric Refrigeration News which I have read with interest."—E. D. Edkins, Commonwealth Edison Co., Chicago.

"Your first issue of the NEWS is a knock-out. It fills a void in the industry. We consider it a privilege to help support you."—H. W. Alexander. The Lamson Co., Syracuse, N. Y.

NEW EQUIPMENT

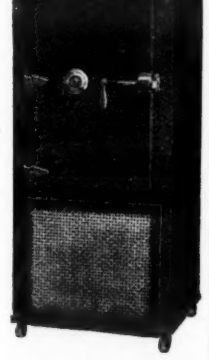
Vogt All-Metal Refrigerator Cabinet has Sliding Drawers In Place of Shelves



A novel development in refrigerators is the all-metal cabinet with sliding food space drawers, patented by the Vogt Refrigerator Co., Louisville, Ky., which company and plant have been acquired by the General Necessities Co., Detroit, Mich.

The new type of cabinet has several advantages, it is claimed. Pulling out the drawer closes the cold air chamber, preventing the entrance of outside heat. It makes all the food accessible without bending or reaching, which should appeal to women users. Each drawer may be removed with the food in it, if desired, making all parts of the interior available for cleaning. Better refrigeration will be obtained, it is claimed, because foods are not subjected to changing temperatures so frequently and the running time of the motor unit is reduced.

The Buffet Kelvinator—an Electric Refrigerator designed for the office or bachelor apartment



Kelvinator Corp., Detroit, Mich., announces the Buffet Kelvinator, a model especially designed to appeal to men. It will be finished in mahogany, walnut or butt walnut to match office furniture. There is a combination lock on the door and a cigar humidor underneath the ice trays. The hardware is a statuary bronze, lining of porcelain, and the ice trays have a capacity of 84 cubes.

CLASSIFIED COLUMN

FOR SALE

Patent cooling container for any make of electric refrigerator, from 25 to 100% more efficient than any absorber or container on the market today. For details write J. Remonte, 305 Main St., Ranger, Tex.

POSITION WANTED

Service man with wide selling and servicing ability experienced in household and small commercial refrigerating machines, capable of training sales and service men, desires position with responsible firm. Address inquiries to Box 4, Care of Electric Refrigeration News.

ASSISTANT EDITOR

Opportunity for young man with newspaper or magazine experience to become assistant or managing editor of Electric Refrigeration News. Offers contact with high grade business executives in rapidly growing industry and chance to do a constructive job in a new field. Write or telephone F. M. Cockrell, 409 East Jefferson Ave., Detroit, Mich. Phone Cadillac 4445.

WANTED

Photographs and descriptive stories of original window displays of electrical refrigerators, store exhibits and demonstrations, portable and community exhibits, for publication in Electric Refrigeration News. Address: Electric Refrigeration News, 409 East Jefferson Ave., Detroit, Mich.

Coldak Literature

New Booklets and Leaflets

Coldak Corporation, 8 West 40th St., New York, has recently issued the following direct advertising material:

"Automatic Electric Refrigeration for Apartment Houses."—A. I. A. File No. 32c (8 pages).

"Coldak System of Multiple Refrigeration for Apartment Buildings, Factories, Delicatessens, Meat Markets, Stores, etc." (folder).

"New Household Models." (16 page booklet).

"Coldak points out an important fact." (leaflet).

"Make your present refrigerator an electric refrigerator." (folder).

"Plug into an Electric Socket and your ice worries are over." (folder).

"Two are better company with Coldak electric refrigeration." (leaflet).

"Letters from Coldak Owners." (24-page booklet).

Servel "Coldery"

An Attractive Booklet of Recipes

"Servel Coldery" is the title of a 32-page booklet in colors recently issued by the Servel Corporation, 51 East 42nd St., New York. The recipes, ideas and methods are the result of experiments by Mrs. K. M. Earle, Caroline B. King, Sarah Field Splint and the Good Housekeeping Institute. On page 30 instructions for loading the electric refrigerator are presented in a colored diagram. Operating instructions and a number of electric refrigeration discoveries are given in addition to recipes for appetizers, entrees, salads, desserts and iced drinks.

Other Servel literature recently issued includes:

"Your Own Electric Ice Maker." (folder).

"When does food go bad?" (leaflet).

"15 days free trial." (leaflet).

Western Distributor Visits Detroit

L. D. Robertson, vice-president and sales manager of Collins-Kelvinator Corp., with headquarters at Los Angeles, distributors of Kelvinator throughout seven states of the Pacific Coast, recently visited the Detroit plant.

F. B. RILEY

Mem. A. S. R. E.

ANNOUNCES THE CONSUMMATION OF PLANS FOR BRINGING TOGETHER UNDER ONE SALES DIRECTION A BROAD RANGE OF STANDARDIZED APPLIANCES AND PRODUCTS FOR THE REFRIGERATING MACHINE INDUSTRY.

The products of these corporations will simplify your engineering problems and lower production costs.

Absolute Con-tac-tor Corp.
ELKHART, IND.
Automatic controls.

Cope-Swift Company
DETROIT, MICH.
Motor pulley fans.

Fedders Manufacturing Co.
BUFFALO, N. Y.
Brine tanks.

Flintlock Corporation
DETROIT, MICH.
Air cooled condensers.

Ireland & Matthews Mfg. Co.
DETROIT, MICH.
Liquid receivers.

Major Engineering Corp.
CHICAGO, ILL.
Major metal.

Manhattan Perforated Metal Co.
NEW YORK, N. Y.
Perforated sheet metal.

Rome Manufacturing Company
ROME, N. Y.
Forged fittings and valves.

Schlieman Companies
NEW YORK, N. Y.
Low temperature oils.

Success Manufacturing Company
GLOUCESTER, MASS.
Refrigerator cabinets.

STANDARD REFRIGERATING APPLIANCES
320 Beaubien Street
Detroit, Mich.

F. B. Riley—
Sales Counsel and Direct Factory Representative